
5.4 MARINE RESOURCES: WATER QUALITY AND WETLANDS

This section examines how the PWP/TREP program of improvements would address potential project impacts to water quality and coastal wetlands, and how the PWP/TREP provides a unique opportunity to improve water quality along the transportation corridors and to enhance significant wetland resources in the North Coast Corridor (NCC). Taken together, the PWP/TREP improvements would:

- Implement a comprehensive, corridorwide program to restore water quality and wetland habitat along the 30-mile NCC coastline.
- Maximize the treatment of surface water runoff through existing surfaces, and new impermeable surfaces, incorporating best management practices (BMP) within the project footprint and reducing the pollutant burden in stormwater runoff along I-5.
- Propose bridge/culvert replacement and bridge lengthening projects over specific lagoons and other coastal waterbodies to better convey flood waters and allow for improved tidal flushing, to reduce sedimentation and improve the flow of water, and thereby improve water quality and the ecological value of the lagoons and riparian systems.
- Implement a comprehensive, corridorwide Resource Enhancement Program (REP), which includes a variety of regionally significant wetland restoration and enhancement opportunities, including acquiring and preserving properties that contribute to protecting and enhancing lagoon system and watershed function and values, proactively restoring and enhancing degraded properties that achieve no net loss of wetland habitat, promoting opportunities for regionally significant lagoon restoration or enhancement projects, and providing endowments for long-term maintenance of the lagoon system through inlet dredging and maintenance.

5.4.1 Coastal Waters and Wetlands in the Corridor

The NCC is located in a region that contains some of the most significant remaining coastal lagoons in southern California. The corridor's lagoons, coastal waterbodies, and smaller watershed drainages support a variety of marine resources including open water, wetland, and riparian habitats. Figure 5.4-1A illustrates the hydrologic units of the corridor, Figure 5.4-1B preliminarily identifies the percentage of pavement to be treated by sub-watershed within the I-5 corridor, and Figure 5.4-2A through Figure 5.4-2G provide an overview of existing and potential open water, wetland, and riparian habitat areas in the I-5 corridor based on the setting evaluated and documented for purposes of preparing the PWP/TREP. As the corridor's natural resources are subject to change throughout implementation of the PWP/TREP, the marine resource mapping included in Figure 5.4-2A through Figure 5.4-2G provide the baseline from which to evaluate potential project impacts to known and potential wetland resources, and to determine when the provisions of this section apply to future project implementation pursuant to the Notice of Impending Development (NOID) procedures enumerated in Chapter 6.

5.4.1.1 Water Quality

The NCC area parallels the coastline throughout northern San Diego County and lies entirely within the coastal region of the San Diego Basin. As discussed in Chapter 2, the corridor improvement areas cross the following 4 of 11 hydrologic units (HUs) within the San Diego Regional Water Quality Control Board (RWQCB) Basin: San Luis Rey River, and the Carlsbad, San Dieguito and Peñasquitos HUs. These HUs contain the corridor's coastal lagoons, the San Luis Rey River, and many other coastal streams, drainages, and wetland resources. Each HU has been developed to varying degrees and all are expected to experience between 7% and 14% more development by 2015.

While the corridor and entire San Diego coastal region has experienced rapid development over the last several decades, the corridor contains significant hydrologic features with many beneficial uses for San Diego residents, visitors, and natural resources. Surface hydrology within the corridor is influenced primarily by the coastal lagoons, creeks, and San Luis Rey River. The corridor contains six significant coastal lagoon systems including Los Peñasquitos, San Dieguito, San Elijo, Batiquitos, Agua Hedionda, and Buena Vista. In addition, the corridor includes the following significant coastal and inland waterways: Carroll Canyon Creek/Soledad Canyon Creek, Los Peñasquitos Creek, San Dieguito River, Carmel Creek, Cottonwood Creek/Moonlight Creek, Encinas Creek, Loma Alta Creek/Slough, Buena Vista Creek, and the San Luis Rey River.

Figure 5.4-2A through Figure 5.4-2G illustrate the significant surface hydrologic features within the I-5 corridor including the lagoons, rivers, streams/creeks and other drainages.

The California Coastal Basin Aquifer is the primary aquifer identified in the corridor. Shallow groundwater likely occurs adjacent to, or in the vicinity of, streams, rivers, and lagoons within the corridor and in the coastal bluff areas of Del Mar. Groundwater is also likely to saturate surface and formational materials near alluvial or estuarine environments, such as the mouths of the major drainage areas and lagoons.

Beneficial Uses

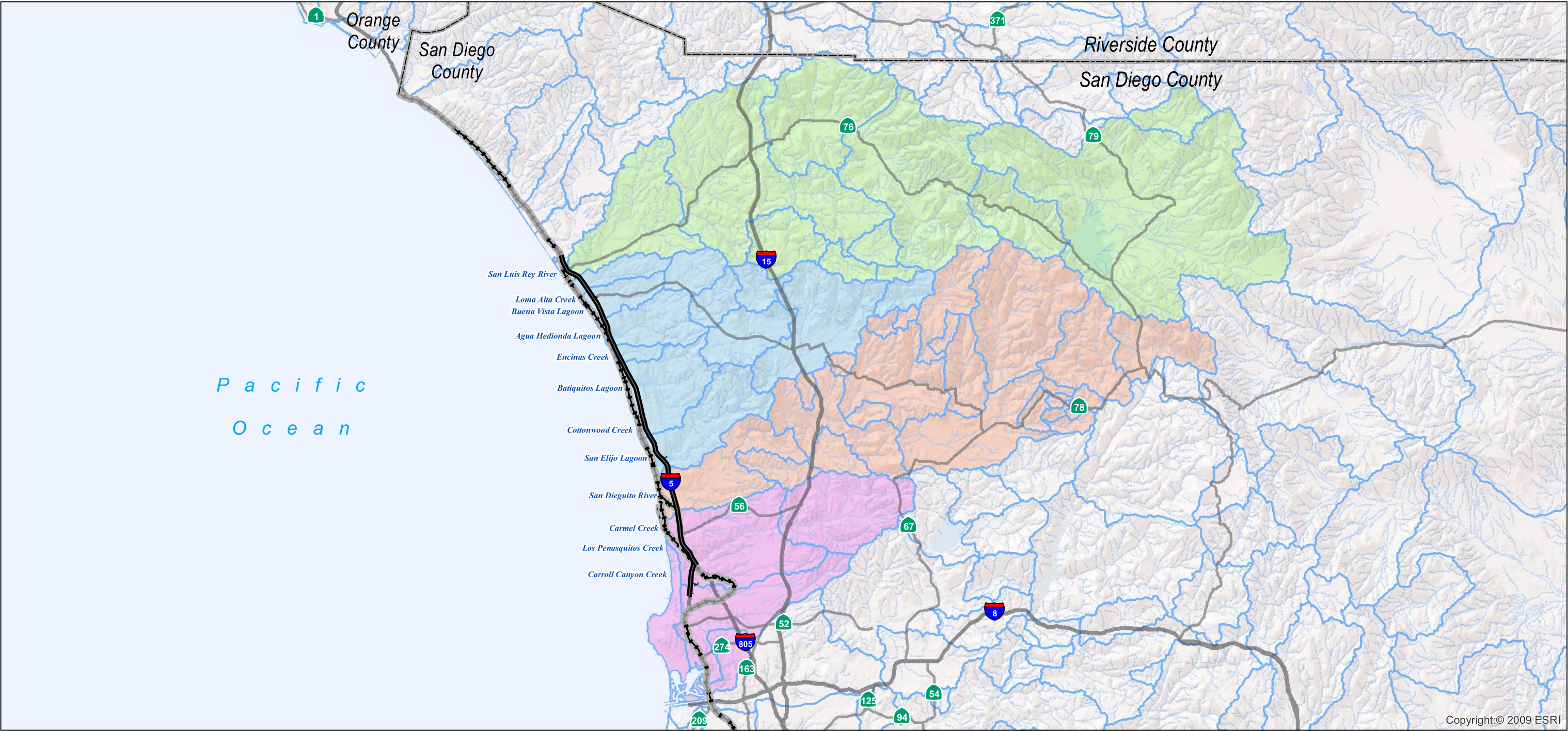
The San Diego RWQCB Basin Plan (Basin Plan) defines “Beneficial Uses” for water bodies as those necessary for the survival or well-being of people, plants, and wildlife. The text below as well as Table 5.4-1 and Table 5.4-2 provide information relative to beneficial uses for the corridor’s lagoons and coastal and inland surface waters.

5.4.1.2 Corridor Lagoons

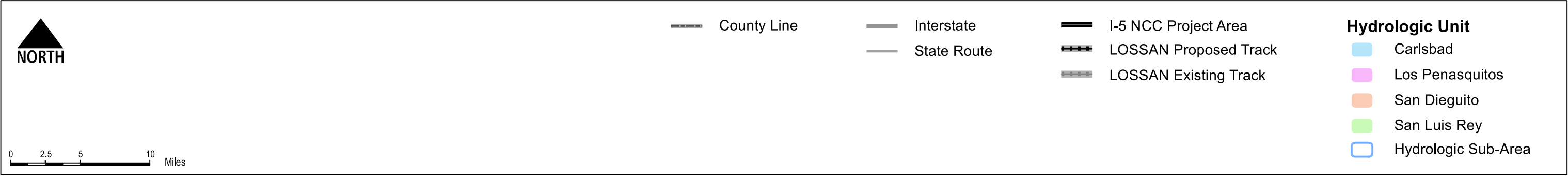
Corridor lagoons provide significant benefits in their respective watersheds for flood relief (by allowing high flows to slow and disperse into the larger water bodies) and for water quality (where sediment loads, nutrients, and toxins from stormwater are discharged and absorbed by vegetation within the lagoon prior to entering the ocean). As discussed in Chapter 2 (Section 2.2.6.2), the lagoons also contain sensitive habitat areas for threatened and endangered species and migratory birds, as well as for fish and many different wildlife species. In addition, where associated with open space and adjacent habitat preservation areas, the corridor lagoons provide habitat linkages and wildlife corridors in a coastal area that has experienced rapid population growth and urbanization over the last several decades. Most of the corridor lagoons provide public recreation amenities with trail systems, interpretative areas, wildlife observation opportunities, and, in some cases, expansive beach areas where the lagoons meet the ocean.

Beneficial Uses

Beneficial uses for the lagoons in the corridor generally include contact and non-contact recreation; preservation of biological habitats of special significance; estuarine habitat (potential estuarine habitat for Buena Vista Lagoon); marine habitat; wildlife habitat; rare, threatened and endangered species; fish migration; spawning, reproduction, and/or early development (with the exception of Buena Vista Lagoon, which is the only lagoon with the beneficial use of warm freshwater habitat). Beneficial uses for Los Peñasquitos and Agua Hedionda Lagoon include shellfish harvesting, with additional beneficial uses in Agua Hedionda for industrial services supply, commercial and sport fishing, and aquaculture. Loma Alta Slough is designated for contact and non-contact recreation, estuarine, marine and wildlife habitats, and rare, threatened, and endangered species. The mouth of San Luis Rey River is also designated for contact and non-contact recreation, marine habitat, wildlife habitat, and rare, threatened and endangered species, as well as for fish migration.



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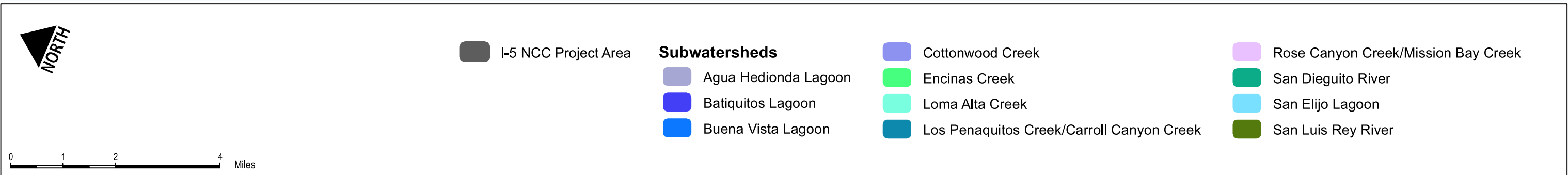
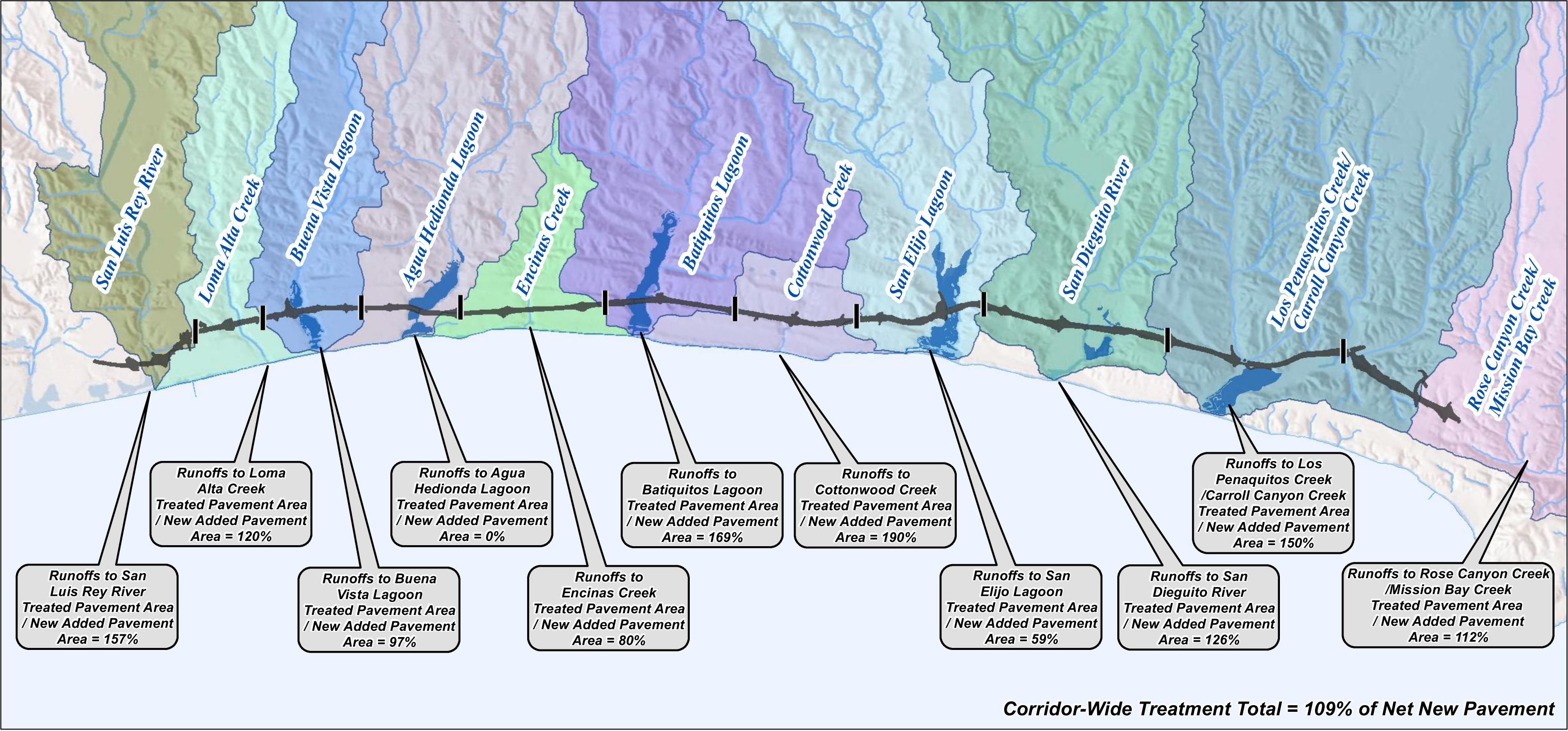


DATA SOURCES: Caltrans, California Coastal Commission, Local Jurisdictions, SanGIS, SANDAG, Imagery: DigitalGlobe March 2008

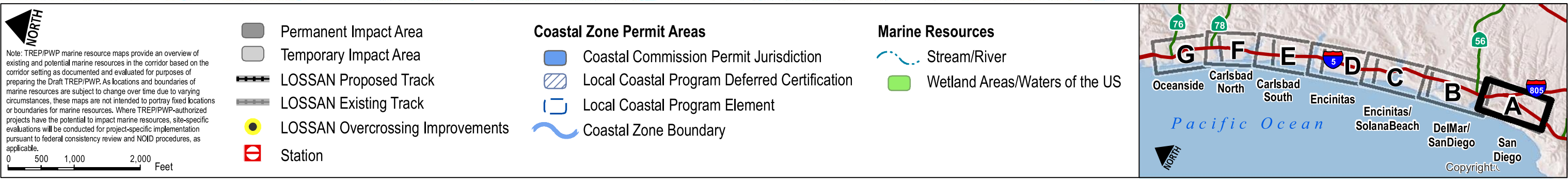
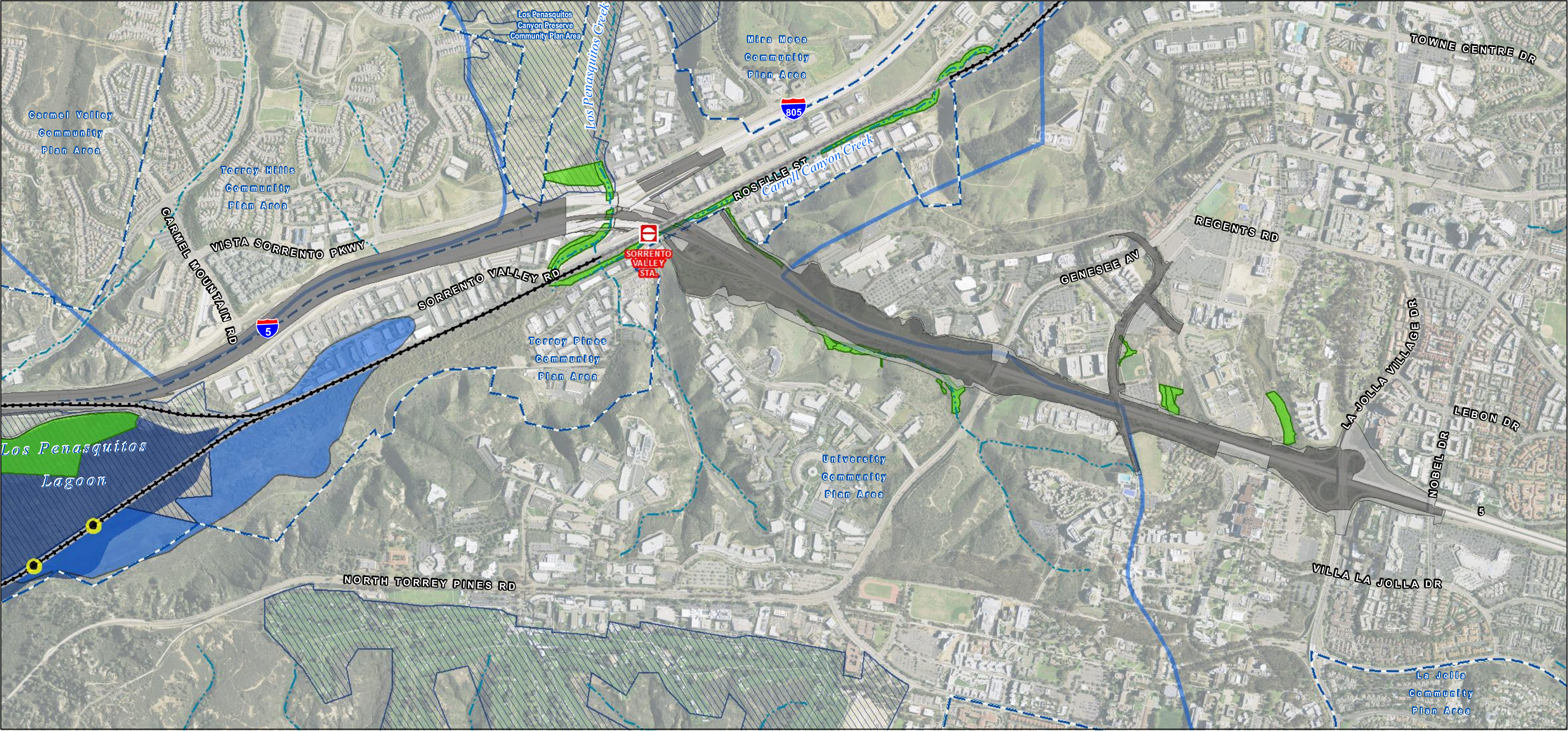
The Coastal Zone boundary, jurisdiction and Local Coastal Program data in this map are for planning and engineering study purposes only. Data are derived from multiple sources. The digital Coastal Zone boundary, jurisdiction and Local Coastal Program data in this map have not been adopted by the Coastal Commission, and do not supersede the official versions certified by the Coastal Commission as may be amended from time to time. Disclaimer: The State of California makes no representations or warranties regarding the accuracy or completeness of the files or the data from which they were derived. The State shall not be liable under any circumstances for any direct, indirect, special, incidental or consequential damages with respect to any claim by any user or any third party on account of or arising from the use of these Coastal Zone boundary, jurisdiction and Local Coastal Program files or the data from which they were derived. Because the Coastal Zone boundary, jurisdiction and Local Coastal Program data files are merely representational, they and the data from which they were derived are not binding and may be revised at any time.

FIGURE 5.4-1A
San Diego Regional Water Quality Control Board Basin Hydrological Units

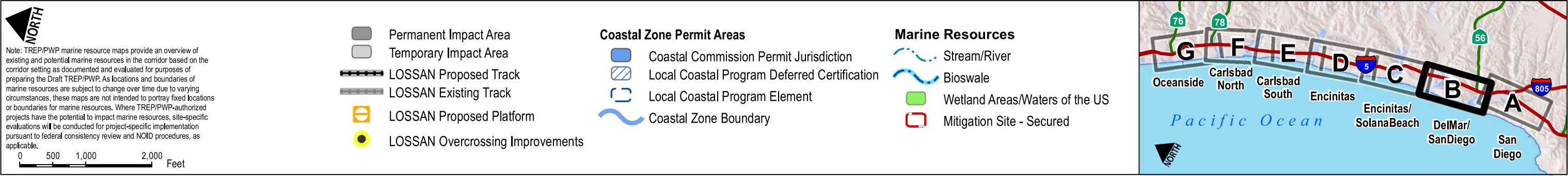
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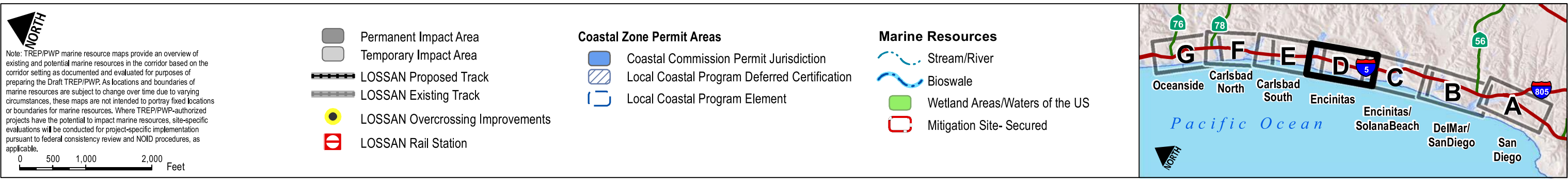
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DATA SOURCES: Caltrans, California Coastal Commission, Local Jurisdictions, SanGIS, SANDAG, USGS NHD, Imagery: DigitalGlobe March 2008

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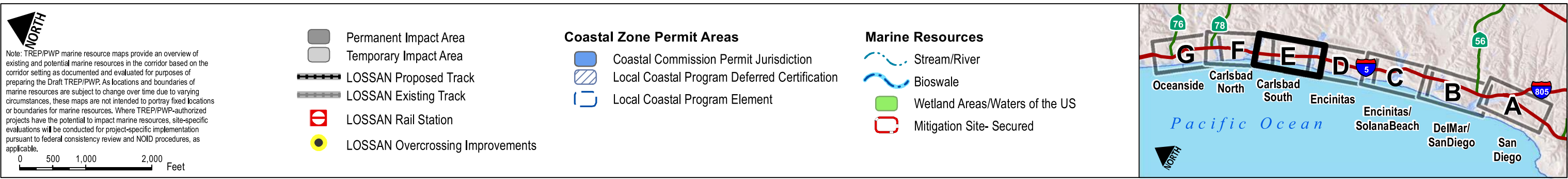


DATA SOURCES: Caltrans, California Coastal Commission, Local Jurisdictions, SanGIS, SANDAG, USGS NHD, Imagery: DigitalGlobe March 2008

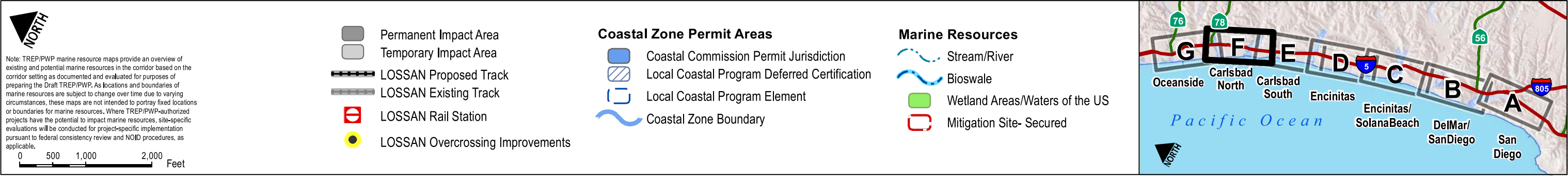
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FIGURE 5.4-2D
Marine Resources Map (City of Encinitas)

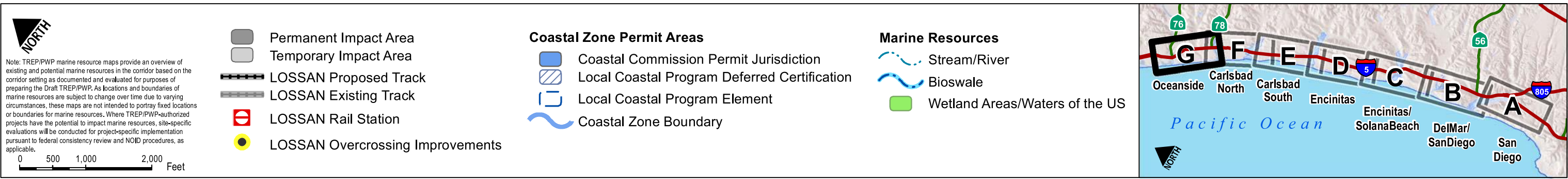
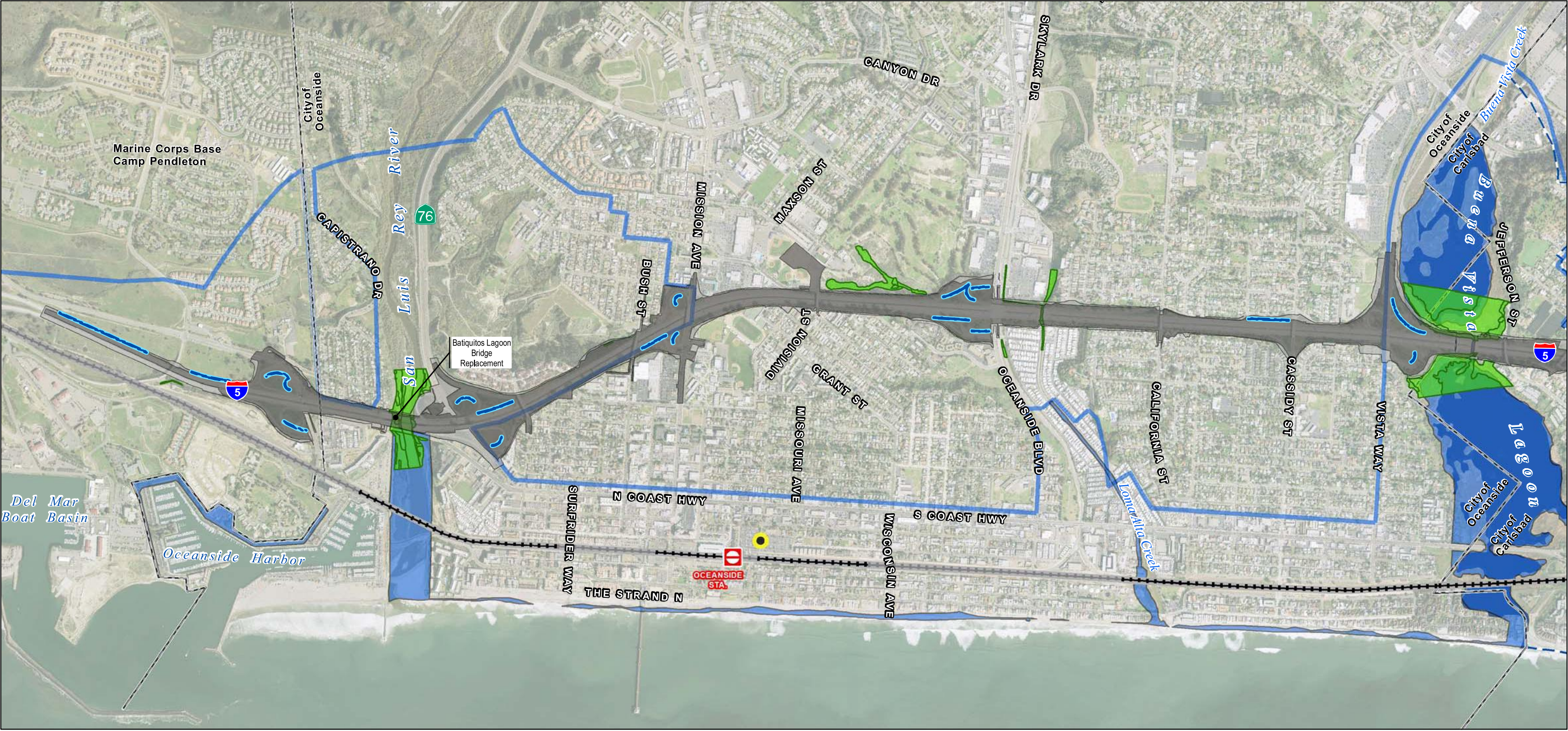
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TABLE 5.4-1: BENEFICIAL USES (CORRIDOR LAGOONS / COASTAL SURFACE WATERS)

Water Body Name	Industrial Services	Contact Recreation	Non-Contact Recreation	Commercial/ Sport Fishing	Biological Habitats of Special Significance	Estuarine Habitat	Wildlife Habitat	Rare, Threatened Endangered Species	Marine Habitat	Aquaculture	Migration	Spawning, Reproduction and/or Early Development	Warm Freshwater Habitat	Shellfish Harvesting
Los Peñasquitos Lagoon		+	+		+	+	+	+	+		+	+		+
San Dieguito Lagoon		+	+		+	+	+	+	+		+	+		
Batiquitos Lagoon		+	+		+	+	+	+	+		+	+		
San Elijo Lagoon		+	+		+	+	+	+	+		+	+		
Agua Hedionda Lagoon	+	+	+	+	+	+	+	+	+	+	+	+		+
Buena Vista Lagoon		+	+		+	X	+	+	+				+	
Loma Alta Slough		+	+			+	+	+	+					
Mouth of San Luis Rey River		+	+				+	+	+		+			

Source: I-5 NCC Project Draft EIR/EIS (Section 3-10), June 2010.

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Existing Beneficial Use
- *

Excepted from Municipal
- x

Potential Beneficial Use

TABLE 5.4-2: BENEFICIAL USES (INLAND SURFACE WATERS)

Water Body Name	Municipal/ Domestic	Agriculture	Industrial Service Supply	Contact Recreation	Non-Contact Recreation	Biological Habitats of Special Significance	Warm Freshwater Habitat	Cold Freshwater Habitat	Wildlife Habitat	Rare Threatened Endangered Species	Spawning, Reproduction and/or Early Development
Carmel Creek	*	+	+	X	+		+		+		
Soledad Canyon Creek	*	+	+	X	+		+	+	+		
Carroll Canyon Creek	*	+	+	X	+		+	+	+	+	
Los Peñasquitos Creek	*	+	+	X	+	+	+		+		
San Dieguito River	*	X	X	+	+		+	+	+		+
Canyon del Las Encinas	*			X	+		+		+		
Loma Alta Creek	*			X	+		+		+		
Buena Vista Creek	*	+	+	+	+		+		+	+	
San Luis Rey River	*	+	+	+	+		+		+	+	

Source: I-5 NCC Project Draft EIR/EIS (Section 3-10), June 2010.

- +

Existing Beneficial Use
- *

Excepted from Municipal
- x

Potential Beneficial Use

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Restoration Efforts

Ongoing lagoon resource planning, restoration and management has been implemented at varying levels for the corridor's lagoons and will continue to be essential in ensuring that the many flood, water quality, habitat, and recreational benefits of these significant watershed features are maintained and enhanced. Los Peñasquitos Lagoon, Batiquitos Lagoon, and Agua Hedionda Lagoon have been the subjects of various types of periodic restoration efforts, including inlet maintenance to allow for tidal circulation, bridge lengthening and repairs to improve circulation, maintenance dredging, water quality monitoring, and wetland and upland habitat restoration.

Buena Vista Lagoon, which contains part of the Buena Vista Lagoon Ecological Reserve maintained by the California Department of Fish and Wildlife (CDFW), is in "Phase II" of a focused restoration effort. Phase II prepares the preliminary engineering and environmental documents that depict various potential restoration alternatives for the lagoon.

The San Elijo Lagoon is part of the San Elijo Lagoon Ecological Reserve, where a focused restoration effort is underway. The San Elijo Lagoon Restoration Project is evaluating alternatives to improve water quality of the lagoon through infrastructure improvements to promote tidal circulation. Improvements may include lagoon inlet enhancements through the lengthening of the bridge on South Coast Highway 101, and the lengthening of rail and highway facilities that cross the lagoon. Based on analysis conducted for the San Elijo Lagoon Restoration Project and the I-5 project, the bridges will be lengthened to optimize the circulation of water, thereby creating wetland habitat within the existing bridge footprint and facilitating the restoration of marsh habitat through improved hydraulic flows.

The San Dieguito Lagoon has benefited from the completion of a major restoration effort implemented by Southern California Edison. The San Diego Association of Governments (SANDAG) is working on expanding the extent of the restored coastal wetlands.

Irrespective of current restoration efforts, all of the corridor lagoons require ongoing management to address the effects of increased year-round freshwater input, accelerated sedimentation and water contamination, reduced tidal mixing, introduction of exotic species, revegetation of disturbed areas, and impacts on habitats and wildlife from adjacent development and recreational use.

Chapter 2 (Section 2.2.6.2) provides a description of each of the corridor lagoons and details the lagoons' ownership, general size, and associated watershed features, habitats, and past and pending planning and restoration efforts. Table 5.4-3 provides a summary of this information in addition to information regarding the status of long-term management, land uses, the surrounding transportation system, and various factors affecting lagoon system health.

5.4.1.3 Other Corridor Wetlands and Riparian Habitats

Wetland and riparian habitat areas are also found in a number of other coastal and inland waterways within the corridor's watersheds including Carroll Canyon Creek (Soledad Canyon Creek), Los Peñasquitos Creek, San Dieguito River, Carmel Creek, Cottonwood Creek/Moonlight Creek, Encinas Creek, Loma Alta Creek/Slough, Buena Vista Creek, and the San Luis Rey River. A number of wetland and riparian habitat types are associated with the various waterbodies identified in the corridor including southern riparian, southern riparian forest, southern cottonwood willow, riparian forest, and San Diego mesa hardpan vernal pool. Southern willow scrub, mulefat scrub, freshwater marsh, southern willow scrub/freshwater marsh, southern arroyo willow woodland, coastal brackish marsh, southern coastal salt marsh, salt marsh transition, arundo scrub, disturbed wetland, mud flat, salt flat, and open water.

Carroll Canyon Creek (Soledad Canyon Creek), Los Peñasquitos Creek, and Carmel Creek all drain the Los Peñasquitos watershed and ultimately discharge into the Pacific Ocean via Los Peñasquitos Lagoon. Carroll Canyon Creek originates southeast of the Miramar Reservoir, in the City of San Diego neighborhood of Scripps Miramar Ranch and feeds into Soledad Canyon Creek. Soledad Canyon Creek has been channelized through Sorrento Valley in a concrete-lined channel for approximately 0.5 miles and converges with Los Peñasquitos Creek, which flows in a natural channel until it reaches Los Peñasquitos Lagoon. Los Peñasquitos Creek drains Los Peñasquitos Canyon, which stretches east of Poway. The San Dieguito River drains the San Dieguito Hydrologic Unit. From the dam forming Lake Hodges, the San Dieguito River flows through the long and narrow San Dieguito River Park past Del Mar, and broadens into a tidal waterway and lagoon as it crosses under I-5 to empty into the Pacific Ocean at Solana Beach. Carmel Creek, fed by tributaries to the east, is located in San Diego just south of Carmel Valley Road and drains through a concrete box culvert under Sorrento Valley Road. These creeks include wetland and riparian areas, and convey flood flows and provide water quality benefits.

Cottonwood Creek and Moonlight Creek flow through an urbanized section of Encinitas. Cottonwood Creek is a small creek that flows intermittently above- and belowground through Encinitas between San Elijo and Batiquitos Lagoons. Cottonwood Creek is primarily channelized or underground near I-5; however, several drainages feed into Cottonwood Creek from the east to west side of I-5 where the outlet to the Pacific Ocean at Moonlight Beach has recently been restored. Restoration efforts have also included the creation of Cottonwood Creek Park west of I-5 where the creek channel has been restored to an aboveground channel between I-5 and the ocean. Cottonwood Creek does not provide substantial flood relief, water quality improvement, or wildlife habitat until reaching the newly restored channels in Cottonwood Creek Park. Moonlight Creek is a small tributary in Cottonwood Creek Park that runs parallel to and west of I-5. Moonlight Creek primarily conveys urban runoff from both sides of I-5 into Cottonwood Creek and supports some freshwater marsh habitat and southern willow scrub, providing habitat to riparian bird species and limited water quality and flood relief benefits.

Encinas Creek is part of the Encinas watershed, which is 3,434 acres in size within the larger Carlsbad Hydrologic Unit. The watershed extends inland from the coast 2.37 miles and the high elevation within the drainage is approximately 430 feet above mean sea level. The watershed begins as a small drainage in an industrial area and is immediately channelized. The creek continues through industrial and office parks associated with Palomar Airport until it reaches the lower valley area. It then makes its way to the Pacific Ocean after crossing I-5 and Pacific Highway.

Loma Alta Creek is a highly disturbed creek beginning in Vista and running through primarily urban areas in Oceanside. The creek flows parallel to Oceanside Boulevard through both natural and concrete-lined channels. After running under I-5 through a pipe, Loma Alta Creek runs into Loma Alta Slough, located north of Buccaneer Beach Park, before ultimately flowing into the Pacific Ocean. The Slough is considered a coastal estuarine wetland. Loma Alta Watershed is the northernmost watershed in the Carlsbad Hydrologic Unit. Loma Alta Creek provides some water quality filtration and conveys storm flows and urban runoff; however, these benefits are minimized by the highly disturbed nature of the Creek.

TABLE 5.4-3: LAGOON SUMMARY TABLE

	Los Peñasquitos	San Dieguito	San Elijo	Batiquitos	Agua Hedionda	Buena Vista
Lagoon Owner/Operator	<ul style="list-style-type: none"> State Parks City of San Diego NCTD Coastal Conservancy Los Peñasquitos Lagoon Foundation 	<ul style="list-style-type: none"> CDFW San Dieguito River Park Joint Powers Authority Southern California Edison County of San Diego City of San Diego 22nd Agricultural District NCTD Private 	<ul style="list-style-type: none"> CDFW County of San Diego San Elijo Lagoon Conservancy 	<ul style="list-style-type: none"> State Lands Commission CDFW Port of Los Angeles Batiquitos Foundation 	<ul style="list-style-type: none"> CDFW SDG&E Leases to YMCA City of Carlsbad Private 	<ul style="list-style-type: none"> CDFW City of Carlsbad City of Oceanside Buena Vista Lagoon Foundation NCTD Private
Size	565 acres	456 acres	491 acres	600 acres	400 acres	203 acres
Watershed Features	<ul style="list-style-type: none"> Carroll/Soledad Canyon Creek Los Peñasquitos Creek Carmel Creek 	<ul style="list-style-type: none"> San Dieguito River Drainages along I-5 	<ul style="list-style-type: none"> Escondido Creek San Elijo Creek 	<ul style="list-style-type: none"> San Marcos Encinitas Encinas Creeks 	<ul style="list-style-type: none"> Agua Hedionda Creek 	<ul style="list-style-type: none"> Buena Vista Creek
Habitat	<ul style="list-style-type: none"> Coastal salt marsh Estuarine Coastal/valley freshwater marsh Riparian scrub Beach Diegan coastal sage scrub Southern maritime chaparral Valley and foothill grasslands 	<ul style="list-style-type: none"> Open water Estuarine/palustrine flats Salt marsh Salt panne Brackish/freshwater marsh Coastal salt marsh Riparian scrub Mulefat scrub Coyote brush scrub Diegan coastal sage scrub 	<ul style="list-style-type: none"> Open water (estuarine and fresh) Sand/mudflats Coastal salt marsh Fresh/brackish marsh Riparian Diegan coastal sage scrub Southern maritime chaparral 	<ul style="list-style-type: none"> Open water Eelgrass Mud flats Coastal salt marsh Brackish emergent marsh Riparian Diegan coastal sage scrub 	<ul style="list-style-type: none"> Open water/subtidal Brackish/freshwater Mudflats Estuarine flats Salt marsh Riparian Diegan coastal sage scrub Mixed chaparral Grasslands Eelgrass 	<ul style="list-style-type: none"> Open water Estuarine Freshwater Coastal brackish and freshwater marsh Southern riparian scrub Eucalyptus woodland
Special-Status Species	<ul style="list-style-type: none"> Belding's savannah sparrow Western snowy plover (Critical Habitat) Light-footed clapper rail California gnatcatcher 	<ul style="list-style-type: none"> Belding's savannah sparrow Light-footed clapper rail Western snowy plover Critical Habitat) California least tern California gnatcatcher 	<ul style="list-style-type: none"> California least tern Belding's savannah sparrow California coastal gnatcatcher (Critical Habitat) Light-footed clapper rail Western snowy plover (critical habitat) 	<ul style="list-style-type: none"> Western snowy plover Belding's savannah sparrow California gnatcatcher California least tern Light-footed clapper rail No tidewater goby within I-5 Study Area 	<ul style="list-style-type: none"> Belding's savannah sparrow California least tern 	<ul style="list-style-type: none"> Belding's savannah sparrow Light-footed clapper rail Tidewater goby surveys near I-5, none found
Past & Present Restoration Efforts	<ul style="list-style-type: none"> Lagoon Enhancement Plan 1985 	<ul style="list-style-type: none"> SCE Restoration Initiated in 2006 	<ul style="list-style-type: none"> San Elijo Lagoon Restoration Project (SELRP) 	<ul style="list-style-type: none"> Lagoon Enhancement Project Port of Los Angeles/Long Beach 	<ul style="list-style-type: none"> Dredging and eelgrass planting Removal of toxic algae 	<ul style="list-style-type: none"> Buena Vista Lagoon Foundation Feasibility Study completed
Long-term Monitoring/Management	<ul style="list-style-type: none"> Southwest Wetlands Interpretive Association and Tijuana National Estuarine Research Reserve monitoring Lagoon outlet breaching Annual maintenance dredging 	<ul style="list-style-type: none"> Coastal Commission Monitoring of SONGS Restoration Project SCE maintenance dredging for open inlet 	<ul style="list-style-type: none"> San Elijo Lagoon Foundation maintenance and monitoring Maintenance dredging Invasive species control program Chemical/biological water quality monitoring to ensure adequate tidal mixing 	<ul style="list-style-type: none"> Port of Los Angeles 10 year Monitoring of Enhancement Project Maintenance dredging Reestablish eelgrass and native cord grass Monitor invasive plant species Monitor chemical, biological, and tidal improvements within basins after 1996 restoration project initiated 	<ul style="list-style-type: none"> Monitoring of toxic algae (Caulerpa) Maintenance dredging 	<ul style="list-style-type: none"> CDFW Ecological Reserve Monitoring/Management Potential for new freshwater, saltwater or mixed regime with future restoration efforts Maintenance dredging

TABLE 5.4-3: LAGOON SUMMARY TABLE (CONTINUED)

	Los Peñasquitos	San Dieguito	San Elijo	Batiquitos	Agua Hedionda	Buena Vista
Land Use	<ul style="list-style-type: none">• Open Space• Utility corridors• Municipal infrastructure (stormwater outfalls & sewer lines)• Small-scale restoration sites.	<ul style="list-style-type: none">• Habitat Restoration• CDFW Ecological Reserve• JPA River Park• Horseback riding	<ul style="list-style-type: none">• Preserved wetland & upland areas• Contact and non-contact recreational uses• Ecological Reserve• Horseback riding	<ul style="list-style-type: none">• Ecological Reserve• Recreation (trails)• Interpretive Center (The Foundation)• Ag Production	<ul style="list-style-type: none">• Habitat Preservation• Commercial/Industrial (Encinas Power Plant desalination plant)• Recreation (YMCA camps, water sports, fishing)	<ul style="list-style-type: none">• Recreation• Fishing• Hiking• Wildlife viewing• Nature tours• Ecological Preservation
Transportation Facility Crossings	<ul style="list-style-type: none">• Railroad• I-5• Coast Hwy 101	<ul style="list-style-type: none">• Jimmy Durante Blvd• Coast Hwy 101• El Camino Real• I-5• Railroad	<ul style="list-style-type: none">• Railroad• Hwy 101• I-5	<ul style="list-style-type: none">• Coast Hwy 101• I-5• Railroad	<ul style="list-style-type: none">• Carlsbad Blvd/Coast Hwy• Railroad• I-5	<ul style="list-style-type: none">• Railroad• Carlsbad Blvd/Coast Hwy• I-5• El Camino Real
Lagoon System Concerns	<ul style="list-style-type: none">• Sedimentation/siltation• Excess freshwater inputs/ increased salinity• Lack of permanent tidal influence• Invasive plant species• Vector control• Impaired Waterbody (303d)	<ul style="list-style-type: none">• Sedimentation/siltation• Sensitive bird species/nesting island maintenance• Maintenance of open tidal inlet• Eelgrass• Potential Essential Fish Habitat (EFH)	<ul style="list-style-type: none">• Increased freshwater/ nutrient-rich inputs• Flooding/ vector control• Sedimentation/siltation• Reduced tidal prism/constrictions resulting in a transition from mudflat to subtidal habitat• Potential EFH	<ul style="list-style-type: none">• Increased sedimentation/siltation• Excessive nutrient loads from agricultural land uses• Invasive plant species• Potential EFH	<ul style="list-style-type: none">• Indicator Bacteria• Sedimentation Siltation• Potential EFH	<ul style="list-style-type: none">• Sedimentation/siltation• Sensitive bird species/ island maintenance

Buena Vista Creek is part of the Carlsbad watershed that drains to the Pacific Ocean via Buena Vista Lagoon. The creek experiences seasonal flows typical of most coastal drainages in San Diego County. However, artisan springs provide for some surface flow even during the summer dry season. During wet winter weather or flood events, surface flow increases significantly into Buena Vista Lagoon. Natural surface flows are augmented by urban and agricultural runoff. Most of the recreational uses are focused along the lower portions of Buena Vista Creek and around Buena Vista Lagoon, which is heavily used as a bird watching location. Sedimentation could pose a long-term threat to the freshwater marsh and open water mosaic that exist.

The San Luis Rey River is a significant resource and riparian feature within the corridor and is one of the few perennial rivers in San Diego County. The San Luis Rey River reach located within the corridor is a combination of open water habitat, freshwater marsh, arundo scrub, and riparian habitat that supports a variety of common and sensitive wildlife species. San Luis Rey River supports listed species, such as the tidewater goby, steelhead, and southern willow catcher, amongst others. San Luis Rey River also plays an important role in conveying storm flows, potential flood relief, and improving water quality from filtering from freshwater marsh species.

Beneficial Uses

All of the inland waterways provide the following beneficial uses (or have the potential to provide beneficial uses): agricultural supply, industrial services supply, contact and non-contact recreation, warm water habitat, and wildlife habitat. Exceptions are Encinas and Loma Alta Creeks, which are not designated for agricultural supply or industrial services supply. Additional beneficial uses include cold freshwater habitat for Soledad Canyon, Carroll Canyon Creek, and San Dieguito River. Beneficial use for rare, threatened, and endangered species is also assigned to Carroll Canyon Creek, Buena Vista Creek, and San Luis Rey River. Los Peñasquitos Creek is designated for preservation of biological habitats of special significance.

5.4.2 PWP/TREP Concerns

Environmental documentation and analysis prepared for the PWP/TREP rail and highway corridor improvements indicate that significant marine resources occur in the corridor, including coastal lagoons, rivers, streams, other wetland areas, and the Pacific Ocean, which could be affected by implementation of the proposed improvements. In addition, environmental documentation demonstrates that many of the corridor's significant marine resources, have experienced and will continue to experience varying degrees of ongoing degradation due to adjacent development stressors and the existing transportation facilities included in the PWP/TREP.

5.4.2.1 Existing Water Quality Deficiencies

Chapter 3 identifies resource deficiencies in the corridor related to water quality and discusses these deficiencies in the context of runoff from corridor urbanization, development and transportation facilities, current transportation facility treatment levels of runoff, the quality of water entering the corridor's waterbodies and the ocean, and impaired waterbodies. The corridor's coastal waterbodies have experienced decades of degradation from direct and indirect impacts of development, including the transportation facilities that cross these resources, which has negatively affected water quality that is essential for protecting coastal resources and maintaining water-oriented recreational use.

Corridor urbanization and development has cumulatively affected water quality as impermeable surfaces have increased and vegetative cover has decreased. This has resulted in significant increases in stormwater pollutant loads and runoff velocity and volume, contributing to excessive erosion and

sedimentation within corridor watersheds. Hydrology and water quality are also potentially affected in the coastal bluff areas of Del Mar along the rail facility where ongoing shoreline erosion problems caused by wave action require ongoing maintenance activities along or within the shoreline to ensure the facility is protected from failure.

The corridor transportation infrastructure generally conveys pollutants to surface waters, which are most often generated from roadways, parking lots, and disturbed landscapes. However, highway facilities comprise only a small portion of the land area (670 acres) in the NCC and are a relatively minor contributor to stormwater pollution. Potential pollutants from the roadway and slopes include sediment, nutrients (nitrogen and phosphorus) from native and ornamental vegetation, metals (copper, lead, and zinc), fertilizers, and pesticides. Other than runoff from parking structures associated with the rail facilities, runoff from rail improvements is relatively minor because of limited impermeable surface area associated with rail lines.

The corridor contains a number of impaired water bodies that do not meet water quality standards (as defined by the Clean Water Act [CWA]), and therefore cannot support the beneficial uses for which the water body has been designated. Chapter 3 identifies impaired water bodies in the corridor (303(d) list), which include Los Peñasquitos Creek, Los Peñasquitos Lagoon, Soledad Canyon Creek, the Pacific Ocean at San Dieguito Lagoon, San Elijo Lagoon, Buena Vista Lagoon, Loma Alta Slough, the Pacific Ocean at the San Luis Rey River mouth and the San Luis Rey River. Inland waterways that are tributaries of, or discharge into, these 303(d) impaired waters may also be considered part of the 303(d) listed water bodies.

A number of impaired water bodies were given special status under the CWA for which the state is required to identify waters that will not achieve water quality standards after application of effluent limits. For these impaired water bodies, states are required to develop plans for water quality improvement. The plans consider each water body and pollutant for which water quality is considered impaired, and include load-based (as opposed to concentration-based) limits called total maximum daily loads (TMDL), which is the maximum amount of pollution (both point and non-point sources) that a water body can assimilate without violating state water-quality standards.

Chapter 3 identifies pollutants discharging with a load or a concentration that commonly exceed allowable standards and that are considered treatable by Caltrans' approved treatment BMPs, which are referred to as Targeted Design Constituents (TDCs). TDCs in the corridor include sediment, metals (total and dissolved zinc, lead, and copper), nitrogen, phosphorus, and general metals. Caltrans developed and implemented a BMP Retrofit Pilot Program to combat these TDCs that was finalized in January 2004 for several locations along the I-5 corridor. The pilot program for runoff in the corridor highway facility included detention devices at I-5 and Manchester Avenue, a wet basin at I-5 and La Costa Avenue, media filters at the La Costa Park & Ride and the SR-78 & I-5 Park & Ride, and a biofiltration system at I-5 and Palomar Airport Road. These facilities were able to treat about 7% (approximately 47 acres) of the total existing paved area in the NCC. Consistent with federal and state law, as well as with the terms of its National Pollution Discharge Elimination System (NPDES) permit, Caltrans also implemented maintenance BMPs that included preventative measures to ensure that ongoing maintenance activities be conducted in a manner that reduces the amount of pollutants discharged to surface waters via Caltrans stormwater drainage systems. Maintenance BMPs were implemented in accordance with the Storm Water Quality Handbook—Maintenance Staff Guide, which provides detailed instructions on applying approved stormwater maintenance BMPs to maintain facility operations and highway activities in a manner that provides maximum protection of water quality.

Existing Lagoon Deficiencies

Chapter 3 also identifies resource deficiencies in the context of the corridor's lagoons and associated sensitive habitat areas. Corridor lagoons have historically experienced adverse impacts to water quality and to the varied habitat areas, plant, and wildlife species supported within and adjacent to the lagoons. The hydrology of the watersheds in the corridor has been directly altered by adjacent development and the existing highway and rail facilities, which have displaced watershed features including lagoon, river, stream, and drainage areas. In addition, realignment and/or channelization of inland waterways conveying stormwater through the watersheds to coastal water bodies have also resulted in significant modification to the hydrology of the lagoons within the corridor. The physical alterations of watershed features have resulted in a cumulative loss of wetland and riparian habitat areas that, in turn, has decreased the valuable biological function of these areas to naturally dissipate and filter sediment and pollutants in stormwater runoff prior to discharge to the lagoons and eventually the Pacific Ocean. In addition to direct displacement of habitat area resulting from adjacent development and construction of the corridor transportation facilities, watershed alterations such as the diversion of freshwater from inland waterways, excess sedimentation and siltation, and, in some cases, reconfiguration of the lagoons' inlet at the ocean, have all contributed to degradation of lagoon resources. Development encroachment has also reduced the amount and quality of transitional and upland habitat areas that typically provide buffers between adjacent land uses and the habitats and species supported by the lagoons.

The health of the lagoons in the corridor is based, in large part, on the extent to which waters are free flowing or stagnant in each system. This health directly affects the quality of habitat provided for lagoon-dependent wildlife, as well as how well the lagoons function for passive recreational purposes (reflected in health of vegetation, lack of odor, etc.). The *I-5 NCC Project Supplemental Draft EIR/EIS* details the results of a number of studies undertaken by SANDAG/Caltrans to identify existing and proposed rail and highway bridge dimensions in context with known environmental concerns for each lagoon system, with analysis of the potential effects of the proposed bridge modifications on tidal circulation, flood flows and associated scour, sediment transport, sea level rise relative to freeboard, wildlife connectivity, channel protection features, and associated impacts on wildlife habitats and federal or state jurisdictional waters/wetlands. The analysis of each lagoon also addresses constraints presented by the Pacific Coast Highway 101 transportation corridor. The analyses confirm that existing rail and highway bridges at San Elijo, Batiquitos, and Buena Vista Lagoons were identified as potentially posing more substantial constrictions (relative to tidal circulation, flood flow, etc.), with a potential for optimization, and additional technical studies were undertaken to identify how the replacement bridges could be designed to optimize tidal and fluvial flows in these system. In addition, there are plans for large-scale restoration efforts at San Elijo and Buena Vista Lagoons where existing bridges could restrict the range of restoration alternatives under consideration for these lagoons.

5.4.2.2 Potential PWP/TREP Project Impacts

PWP/TREP concerns for protection and enhancement of marine resources relate to proposed project impacts that may occur from construction, operation, and maintenance of the rail and highway facilities, and community enhancement improvements, which include new and enhanced recreation facilities. The PWP/TREP improvement areas are located within and/or drain directly to a number of coastal waterbodies and proposed improvements that could individually or cumulatively result in short-term construction or long-term operational water quality and marine habitat impacts. Transportation improvements and facilities often generate sources of pollutants that are carried by runoff to adjacent waterbodies, thus affecting water quality and sensitive marine resources.

The proposed PWP/TREP improvements would result in changes to the project area land surface through grading and increased impervious surfaces, which could increase peak runoff rates, and volume and pollutant loads from pre-development levels.¹ PWP/TREP improvements would also require grading and landform modification that could disrupt and/or interfere with surface water flow and natural attenuation of runoff by drainage features, resulting in increased peak flood discharge, erosion, and sedimentation to receiving waterbodies. In addition, potential erosion and sedimentation impacts are of concern where existing rail improvements along Del Mar Bluffs require construction activities for the maintenance of existing shoreline protection devices. Implementation of the PWP/TREP improvements could also cause impacts to water quality due to increased runoff and erosion from grading and vegetation removal. Other construction related impacts may include accidental discharge and spill of construction debris and pollutants from construction equipment, demolition activities with bridge improvement and replacement projects, and with construction activities along the railway on Del Mar Bluffs.

However, without the proposed PWP/TREP infrastructure improvements, the corridor's water quality, and lagoon, wetland and riparian habitat areas will continue to degrade. The proposed transportation infrastructure improvements, when combined with the PWP/TREP Resource Enhancement Program (detailed in Chapter 6), could significantly restore and enhance marine resources and thereby improve many of the existing deficiencies of the corridor's water quality, lagoon, wetland, and riparian habitat areas. Existing LOSSAN rail and I-5 highway transportation facilities contribute to degraded water quality and marine habitat due to previous transportation construction practices that displaced marine habitats, and which also limit opportunities for retrofitting facilities to improve water quality. Absent the proposed PWP/TREP facility improvements, opportunities to modify existing transportation infrastructure to improve existing deficiencies of water quality, lagoon, wetland, and riparian habitat resources would remain extremely limited and unlikely. As such, the PWP/TREP improvements are planned and designed to remedy impacts to water quality and marine resources caused by previous construction and/or ongoing operations of the existing transportation facilities to the extent feasible. Implementing the PWP/TREP would thereby facilitate enhancement and restoration of the biological productivity and quality of marine resources including coastal waters, lagoons, and streams.

5.4.2.3 LOSSAN Rail Corridor Impact Assessment

Proposed rail facility track improvements would not result in significant expansion of impermeable surfaces and thus would not contribute substantially to increased stormwater runoff. The majority of rail improvements would be contained within the existing right-of-way or in deep tunnels and, thus, would minimize the need for excessive grading and landform modification that could otherwise disrupt and/or interfere with surface water flow or result in increased peak flood discharge, erosion, and sedimentation to receiving waterbodies. Rail improvements include parking area expansion at stations and a new platform at Del Mar that would involve increased impervious surfaces and could contribute to increased runoff, erosion, and pollutant loads to receiving waterbodies; however, with the exception of the proposed platform at Del Mar, all stations now have, or are developing, vertical parking structures in already developed areas. It is expected that proposed parking resources would likely be met through additional parking levels in the existing structures; therefore, impervious surface at ground level would not increase substantially.

¹ I-5 NCC Project Draft EIR/EIS (Section 3-10), June 2010; I-5 NCC Project Supplemental Draft EIR/EIS (Chapter 3), August 2012; LOSSAN Final Program EIR/EIS (Section 3.12), September 2007.

Potential hydrology and water quality impacts related to construction of rail improvements could result from ground-disturbing activities for double-tracking, at shafts, portals, grade separations and staging areas. Sources of stormwater pollution during construction could include equipment and vehicle leaks of oil, grease, fuel, etc., construction materials, and waste material. Though not specifically addressed in the Los Angeles-San Diego-San Luis Obispo (LOSSAN) Final Program EIR/EIS, but based on data presented in the I-5 NCC Project Draft EIR/EIS (June 2010), Essential Fish Habitat (EFH) could occur within the rail corridor in San Dieguito, Batiquitos, Agua Hedionda and San Elijo Lagoons. These possible EFHs could be impacted with any degradation in water quality and/or hydrology. Eelgrass beds grow subtidally and are important habitats for aquatic species and have specific regulations concerning impacts and mitigation. Subtidal portions of the lagoons within the study area were surveyed in 2006 for current eelgrass and possible invasive algae (i.e. *Caulerpa taxifolia*) distributions for purposes of identifying potential impacts. Eelgrass was observed in Batiquitos and Agua Hedionda Lagoons. Eelgrass habitat could be impacted by degraded water quality and hydrology.

As part of the conceptual design at the program level, the lead agencies have proposed, at a minimum, maintaining either the same in-water footprint or reducing the number of in-water columns compared to the existing rail corridor bridges; however, proposed rail improvements would likely result in unavoidable fill impacts to wetlands. Preliminary assessment indicates that approximately 7.45 acres of total wetland habitat within the rail corridor could be directly impacted by proposed rail improvements in the first three phases of the NCC Program Phasing Plan. Within Oceanside and Carlsbad, there would be approximately 0.63 acres of potential wetland impact due to proposed rail projects. Within Encinitas and Solana Beach, approximately 5.65 acres of wetlands are mapped within the proposed rail alignment options, while approximately 1.17 acres are mapped within the Del Mar and San Diego area.

An additional 11.8-12.6 acres of wetland impacts could occur with implementation of the two double-track rail projects in Del Mar and San Diego included in the vision (final) project phase, depending on the future tunnel alternative selected. Either tunnel option in the Del Mar area would involve deep tunneling that would avoid disturbance along the tunnel routes to most wetland resources, except potentially at portal areas, like through the CDFW Preserve in San Dieguito Lagoon. The Camino Del Mar tunnel option would involve double-tracking across the Los Peñasquitos and San Dieguito lagoons on existing or new rail bridges, which could be done without net increase of the in-water footprint of the rail infrastructure within the lagoons. Construction along the lagoon perimeters would have direct and indirect impacts on wetland areas during construction. There may be the opportunity to replace the existing bridge across Los Peñasquitos with a causeway structure that would increase the tidal flow and remove the embankment from the lagoons. This would require extensive in-water work, causing higher impacts during construction, but would result in a long-term beneficial impact to the lagoon, which would be determined in project-level analyses. The I-5 tunnel option would avoid crossing Los Peñasquitos Lagoon, but the design concept would include a new, elevated structure along the south edge of San Dieguito Lagoon, following the southern edge of San Dieguito Racetrack View Drive, which may result in potential new, temporary and permanent impacts on wetland resources. The I-5 tunnel option would allow for the removal of the existing Los Peñasquitos rail bridge structures in the future, which would have temporary impacts on the lagoon from in-water work to remove the existing structure but ultimately create better tidal circulation in the lagoon.

Table 5.4-4 provides a breakdown of potential rail corridor wetland impacts versus available mitigation credits according to the project phases as defined in the Phasing Plan presented in Chapter 6 (see Table 6-1).

Temporary Impacts

In all cases, temporary construction impacts from project activities in and around the lagoons could affect habitats associated with the lagoons. Potential impacts include in-water work for new infrastructure, possible removal of existing structures, turbidity, and increased sedimentation during construction; however, as discussed below, it is also anticipated that proposed bridge replacement projects over the lagoons and other coastal waterbodies could have a beneficial effect on hydrology and water quality by constructing new bridges that better convey flood waters, allow for improved tidal flushing, and thereby improve water quality and marine resources.

5.4.2.4 I-5 Highway Corridor Impact Assessment

Operational and construction activities for the proposed highway improvements could affect water quality and marine habitats. The *I-5 NCC Project Draft EIR/EIS* compares and analyzes existing and proposed additional pavement areas between the four proposed Build Alternatives, whereas the *I-5 NCC Project Supplemental Draft EIR/EIS* discusses in detail the effects of the Locally Preferred Alternative (LPA) on corridor water quality and marine habitats. A number of existing treatment BMPs are present within the project limits, including biofiltration swales and strips, extended detention facilities, wet basins, and media filters; with these facilities providing treatment for runoff from associated paved areas within the I-5 corridor. The percentage of runoff that is treated is approximately 7%. The LPA could modify local drainages and alter some of the existing treatment tributary areas. The existing and proposed amounts of impervious areas within the project limits were quantified based on average directional dimensions for general purpose lanes, with auxiliary lanes, median, and on- and off-ramps. The existing paved area within the I-5 corridor comprises approximately 670 acres, of which 7% is treated through BMPs. The LPA would result in approximately 214 acres of new paved area (for a combined paved area of 884 acres) with treatment to be provided for approximately 240 acres of the equivalent net new impervious area. This means that 109% of net new pavement (or 27% of the total combined pavement) will be treated corridorwide. See Table 5.4-5 for a breakdown of current and proposed new treated pavement by watershed area. While the increased impervious area may be considered significant in the context of the existing highway facility, the maximum Caltrans tributary area discharging to any of the hydrologic areas/subareas in the corridor would continue to be minimal.

In addition, pollutants from construction activities could be generated from construction materials as well as construction activities. Pollutants generated from construction materials could include vehicle fluids, asphaltic emulsions from paving activities, joint and curing compounds, concrete curing compounds, solvents and thinners, paint, sandblasting material, landscaping materials, treated lumber, PCC rubble, and general litter. Pollutants from construction activities could include clearing and grubbing, grading operations, soil import operations, sandblasting, landscaping, and utility excavation.

TABLE 5.4-4: PERMANENT WETLAND IMPACTS VS. MITIGATION (BY YEAR/PHASE)

Phase	Transportation Improvements	Impacts (Acres)	Mitigation Site	Wetland Establishment (Acres)	Wetland Restoration (Acres)	Available No Net Loss Mitigation (Releases 1 & 2 @ 40%)	Available No Net Loss Mitigation (Release 3 @ 15%)	Available No Net Loss Mitigation (Release 4 @ 15%)	Available No Net Loss Mitigation (Release 5 @ 15%)	Available No Net Loss Mitigation (Final @ 15%)	Total Mitigation (Acres)			
2010-2020	YEAR 2013													
	Oceanside Through Track (2013)	0	None underway	0	0	0								
	Poinsettia Station Improvements (2013)	0												
	TOTAL IMPACT (2013)	0										TOTAL AVAILABLE MITIGATION (2013)		0
	TOTAL ROLLOVER MITIGATION AVAILABLE (AFTER IMPACTS SUBTRACTED)						0							
	YEAR 2014													
	2 HOV from Lomas Santa Fe to Union St, including San Elijo Bridge Replacement, Manchester DAR, bike paths/trails & ultimate grading (Phase 1A: 2014-2017)	0.53	Hallmark (Agua Hedionda)	4.37	0.97	2.14								
	1 HOV from Union St to SR 78 (Phase 1B: 2014-2017)	0.79	Regional Lagoon Maintenance Program (Endowment Established; *10% Proposed for Release Upon Establishment, under Contingency)	39.8	0	3.98*								
	CP Cardiff to CP Craven - San Elijo Lagoon Double Track (2014)	4.47												
	TOTAL IMPACT (2014)	5.79	TOTAL AVAILABLE MITIGATION (2014)				6.12							
	TOTAL ROLLOVER MITIGATION AVAILABLE (AFTER 2013 + 2014 IMPACTS SUBTRACTED)						0.33							
	YEAR 2015													
	2 HOV from La Jolla Village Dr to I-5/I-805 merge, includes Voigt DAR & I-5 /I-805 HOV Flyover Connector (Phase 1C: 2015-2020)	0.13	Hallmark (Agua Hedionda)	Ongoing; year 1 monitoring				0.80						
	CP Eastbrook to CP Shell Double-Track (2015)	0.36	Regional Lagoon Maintenance Program	Ongoing; credit released when adequate funds established in escrow account and/or contingencies required										
	Carlsbad Village Double-Track, includes Buena Vista Bridge Replacement (2015)	0.26	San Dieguito W19 (San Dieguito)	47.3	0	18.92								
	TOTAL IMPACT (2015)	0.75	MITIGATION RELEASED BY YEAR (2015)				18.92	0.80						
	TOTAL AVAILABLE MITIGATION (2015)						19.72							
	AVAILABLE MITIGATION SUBTOTAL (2014 ROLLOVER + 2015)							20.05						
	TOTAL ROLLOVER MITIGATION AVAILABLE (AFTER 2015 IMPACTS SUBTRACTED)							19.3						
	YEAR 2016													
	CP Ponto to CP Moonlight Double-Track, includes Batiquitos Bridge Replacement (2016)	0.01	Hallmark (Agua Hedionda)	Ongoing; year 2 monitoring					0.80					
	Encinitas Station Parking	0	Regional Lagoon Maintenance Program	Ongoing; credit released when adequate funds established in escrow account and/or contingencies required										
	Solana Beach Station Parking	0	San Dieguito W19 (San Dieguito)	Ongoing; year 1 monitoring				7.09						
	San Dieguito Bridge/Double-Track, includes San Dieguito Lagoon Bridge Replacement (2016)	2.35												
	TOTAL IMPACT (2016)	2.36	MITIGATION RELEASED BY YEAR (2016)					7.09	0.80					
	TOTAL AVAILABLE MITIGATION (2016)							7.89						
	AVAILABLE MITIGATION SUBTOTAL (2015 ROLLOVER + 2016)							27.19						
	TOTAL ROLLOVER MITIGATION AVAILABLE (AFTER 2016 IMPACTS SUBTRACTED)							24.83						
	INITIAL-TERM TOTAL IMPACT		8.9	INITIAL-TERM TOTAL MITIGATION							92.44			

TABLE 5.4-4: PERMANENT WETLAND IMPACTS VS. MITIGATION (BY YEAR/PHASE) (CONTINUED)

Phase	Transportation Improvements	Impacts (Acres)	Mitigation Site	Wetland Establishment (Acres)	Wetland Restoration (Acres)	Available No Net Loss Mitigation (Releases 1 & 2 @ 40%)	Available No Net Loss Mitigation (Release 3 @ 15%)	Available No Net Loss Mitigation (Release 4 @ 15%)	Available No Net Loss Mitigation (Release 5 @ 15%)	Available No Net Loss Mitigation (Final @ 15%)	Total Mitigation (Acres)
2021-2030	2 ML from I-5/I-805 to SR 56, including new Sorrento Valley Road bike/maintenance vehicle bridge, trails under I-5 at Carmel Creek, widening of I-5 at Carmel Creek, and trail under merge (Phase 2A: 2020-2022)	+0.41 (creation)	Hallmark (Agua Hedionda) San Dieguito W19 (San Dieguito) Regional Lagoon Maintenance Program	Ongoing		Full mitigation/sign-off anticipated by 2021					
	2 ML from SR 56 to Lomas Santa Fe Dr, including San Dieguito River Bridge Widening and bike paths/trails (Phase 2B: 2020-2025)	3.59									
	2 ML from Union St to Palomar Airport Rd, including Batiquitos Lagoon Bridge Replacement (Phase 2C: 2025-2030; if not advanced, see separate line item below)	1.33									
	Batiquitos Lagoon Bridge Replacement (Phase 2D: 2025-2030; if completed separately and not advanced with HOV project)	*4.78									
	Oceanside Station Parking	0									
	Carlsbad Village Station Parking	0									
	Carlsbad Poinsettia Station Parking	0									
	CP Moonlight to CP Swami Double-Track	0									
	Del Mar Fairgrounds Special Event Platform	0									
	MID-TERM TOTAL IMPACT (WITH ADVANCING BATIQUITOS BRIDGE)	4.51	MID-TERM TOTAL AVAILABLE MITIGATION								83.54
TOTAL MID-TERM ROLLOVER MITIGATION AVAILABLE (AFTER IMPACTS SUBTRACTED)										79.03	
*MID-TERM TOTAL IMPACT (WITHOUT ADVANCING BATIQUITOS BRIDGE)	9.29	MID-TERM TOTAL AVAILABLE MITIGATION								83.54	
TOTAL MID-TERM ROLLOVER MITIGATION AVAILABLE (AFTER IMPACTS SUBTRACTED)										74.25	
2031-2040	2-4 ML from Palomar Airport Rd to SR 76, includes Agua Hedionda & Buena Vista Lagoon Bridge Replacements (Phase 3A-3C: 2030-2035)	5.76	Hallmark (Agua Hedionda) San Dieguito W19 (San Dieguito) Regional Lagoon Maintenance Program	Ongoing		Full mitigation /sign-off anticipated by 2021					
	Construct Braided Ramps from Roselle to Genesee (Phase 3D: 2030-2035)	1.11									
	LONG-TERM TOTAL IMPACT	6.87									
	LONG-TERM TOTAL AVAILABLE MITIGATION										74.25 – 79.03
TOTAL ROLLOVER MITIGATION AVAILABLE (AFTER IMPACTS SUBTRACTED)										67.38 – 72.16	
NCC TOTALS (ALL PHASES EXCLUDING VISION & WITH ADVANCING BATIQUITOS BRIDGE)		20.28	Sites identified above.	91.47	0.97	92.44					
NCC TOTALS (ALL PHASES EXCLUDING VISION & WITHOUT ADVANCING OF BATIQUITOS BRIDGE)		25.06	Sites identified above.	91.47	0.97	92.44					
2041-2050	Leucadia Blvd Grade Separation	0	Hallmark (Agua Hedionda) San Dieguito W19 (San Dieguito) Regional Lagoon Maintenance Program	Ongoing		Full mitigation /sign-off anticipated by 2021					
	Del Mar Tunnel	2.01-2.77									
	- Camino Del Mar / Peñasquitos Double-Track Option										
	- I-5 / Peñasquitos Option										
	Peñasquitos Double-Track	9.87									
	I-5/SR-78	3.5									
VISION TOTAL IMPACT		15.38 – 16.14	VISION TOTAL AVAILABLE MITIGATION								67.38 – 72.16
TOTAL “ENHANCEMENT” FOLLOWING PROGRAM IMPLEMENTATION										51.24 – 56.78	

TABLE 5.4-5: WATER QUALITY TREATMENT BY WATERSHED

Watershed	Existing Pavement (ac)	Existing BMPs	Total Existing Treated Pavement (%)	New Pavement (ac)	Proposed Treatment BMPs	Total New Treated Pavement (Equiv.) (%)	Total Combined Treated Pavement (%)
Rose Canyon Creek/Mission Bay Creek	11	None	0	8	Bioswales (3)	112	47
Los Peñasquitos Creek/Carroll Canyon Creek	182	Bioswales and Detention Basin	4	21	Bioswales (7)	150	16
San Dieguito River	90	Bioswales and Detention Basin	27	29	Bioswales (10)	126	31
San Elijo Lagoon	53	Bioswales and Detention Basin	13	39	Bioswales (6); First Flush flow diversion	59	23
Cottonwood Creek	43	None	0	20	Bioswales (12)	190	59
Batiquitos Lagoon	56	Wet Basin	7	21	Bioswales (5)	169	46
Encinas Creek	60	Bioswales	7	22	Bioswales (5)	80	21
Agua Hedionda Lagoon	45	None	0	16	None (right-of-way/ESHA impacts)	0	0
Buena Vista Lagoon	43	None	0	12	Bioswales (3)	97	21
Loma Alta Creek	28	None	0	13	Bioswales (4)	120	38
San Luis Rey River	46	None	0	12	Bioswales (9)	157	33
Santa Margarita (discharges onto Oceanside Harbor)	6	None	0	1	Bioswales (2)	645	40

Note: All numbers identified are preliminary and will be refined as design progresses.

PWP/TREP improvements over the corridor's lagoons would result in unavoidable impacts to wetlands because I-5 is an existing north/south transportation corridor that transects the east-west lagoon drainages. Wetland habitat impacts associated with the LPA include impacts at the six lagoons, as well as the San Luis Rey River, Loma Alta Creek, Encinas Creek, Cottonwood Creek, and numerous small lined and unlined drainage ditches that run parallel to I-5. All drainage ditches, arundo scrub, and salt marsh transition habitats have been included in the wetland habitat impact analysis for proposed highway improvements. The majority of the impacts to wetlands are associated with facility widening at the lagoons. The *I-5 NCC Project Draft EIR/EIS* (Section 3.17) analyzes and provides a comparison of potential coastal wetland impacts for the four proposed Build Alternatives, whereas the *I-5 NCC Project Supplemental Draft EIR/EIS* (Chapter 3) discusses in greater detail the specific effects of the LPA on corridor wetland habitats. Caltrans has determined that approximately 17.6 acres of coastal wetland habitat within the highway corridor could be directly impacted by proposed highway improvements. Temporary impacts to coastal wetlands are also identified in the *I-5 NCC Project Supplemental Draft EIR/EIS* and associated Draft Biological Assessment and could range up to approximately 13.5 acres, and depending on their severity and duration these temporary impacts could be considered permanent. Table 5.4-4 provides a breakdown of potential highway corridor permanent wetland impacts, but does not account for the temporary impacts, according to the project phases as defined in the Phasing Plan presented in Chapter 6 (Table 6-1).

The first phase of construction for the I-5 NCC Project would occur between 2010 and 2020 is broken into three different subprojects. Phase 1A would begin in 2014 and would include the grading for the ultimate widening of I-5 from just north of the Lomas Santa Fe interchange to the Union Street overcrossing in Encinitas. This phase would include replacement and lengthening of the new bridge over San Elijo Lagoon. The creation of wetland from lengthening of the lagoon bridge would result in a net creation of 0.21 acre of state jurisdictional wetland; however, there are some impacts to Cottonwood and Moonlight Creeks between Santa Fe and Union Street as a result of the widening of the freeway placement of bioswales and impacts from trails resulting in a net impact of 0.53 acre of wetland in Phase 1A. The disturbed drainage of Cottonwood Creek, southeast of I-5 and Encinitas Boulevard, would have impacts from the new trails and the bioswales northwest of Encinitas Boulevard will result in a few sliver impacts to wetlands. Other projects in the first phase include extending one high-occupancy vehicle (HOV) lane in the median in each direction from the Union Overcrossing to SR-78 and completion of the ultimate widening of I-5 between La Jolla Village Drive and the 5/805 flyover. The braided ramps between Roselle and Genesee are not part of Phase 1C. The median widening would have minimal impacts to the outside of I-5 and would not impact the lagoon wetlands. Phase 2 is broken into four projects. The replacement of the Batiquitos Bridge is identified separately, as it may be funded in the first phase to reduce staging impacts for bridge construction. Ultimate widening from the I-5 / I-805 merge to SR-56, from SR-56 to Lomas Santa Fe Drive, and from Union Street to Palomar Airport Road. Phase 3 would have the remainder of the widening projects to complete the corridor.

As described above, smaller wetland and riparian areas associated with the corridor's various streams and drainages would also be affected. Drainages feeding into Cottonwood Creek, Encinas Creek, and those parallel to I-5, north of Genesee Avenue, would have portions placed into culverts. Although these smaller drainages do not present the high quality habitat that the lagoons and San Luis Rey River provide, the highway improvements would result in placing several of these small wetlands and riparian areas into culverts, which could eliminate potential for wildlife habitat, flood control, or water quality functions.

Additional indirect impacts to water quality and marine habitats could occur as a result of improved public use opportunities within and along sensitive marine resources. If not properly located, constructed and maintained, public use could result in erosion, litter accumulation, or other pollutant

releases within and along marine resources that are located in public access and recreation facility areas.

5.4.3 PWP/TREP Opportunities, Policies, Design/Development Strategies and Implementation Measures

The proposed PWP/TREP provides an opportunity to implement a comprehensive, corridorwide program to restore water quality and wetland habitat along the 30-mile NCC coastline that is recognized for a number of unique and significant marine and environmentally sensitive resource areas (ESHA). The coastal watersheds, lagoons, and upland areas in the corridor provide a range of diverse habitats and ecosystems that support a variety of plant and wildlife species. Due to the location of the proposed NCC improvements, the sensitive habitats traversed by the planned corridor improvements and the sensitive species living along the corridors, all impacts to coastal resources cannot be avoided. Implementation of a corridorwide water quality enhancement program would help to restore, where feasible, watershed features previously displaced or altered by the existing transportation facilities, and would include transportation facility improvements incorporating current BMPs to reduce contaminant loads in stormwater, which would serve to restore and facilitate the long-term maintenance of water quality within the corridor's watersheds. The NCC Resource Enhancement Program (REP), discussed further in the following section, has been developed to identify compensatory mitigation measures to address these unavoidable impacts, and to implement resource enhancement opportunities that exceed the benefits of standard compensatory mitigation programs.

In light of the inherent limitations to retrofit the existing facilities to address adverse impacts associated with polluted stormwater runoff, PWP/TREP improvements involve construction of new facilities and significant facility modifications which provides an opportunity to address this concern. The proposed PWP/TREP improvements would implement treatment BMPs for both the new and existing impervious pavement as each portion of the corridor project is designed to the maximum extent practicable with the best available technology, and in compliance with the 2013 Caltrans Statewide Storm Water Permit issued by the Water Resources Control Board. To further support water quality treatment within the corridor, Caltrans would use porous pavement at the Manchester park-and-ride, and would implement a pilot program to assess the use of porous pavement at a Genesee ramp and determine applicability at other ramps throughout the corridor. The program of improvements would include analyzing each individual hydrological area from a water quality perspective in relation to the impaired receiving water bodies. This is being done as SANDAG/Caltrans is an active member of several lagoon stakeholder groups throughout the corridor monitoring and eventually implementing measures to address the TMDLs of constituents identified by the San Diego RWQCB. Combined with these efforts, the PWP/TREP would provide for a more comprehensive approach to analyze the hydrology of each individual hydrological area for BMP implementation thus improving water quality of the corridor.

Proposed treatment BMPs would include use of biofiltration strips or swales, which are vegetated channels, typically configured as trapezoidal or v-shaped channels that receive and convey stormwater flows while meeting water quality criteria and other flow criteria. Pollutants are removed by filtration through the vegetation, sedimentation, adsorption to soil particles, and infiltration through the soil. Strips and swales are effective at trapping litter, Total Suspended Solids (soil particles), and particulate metals. In most cases, flow attenuation is also provided, thus biofiltration swales and strips can also be considered a low-impact development technique. Biofiltration strips and swales would be considered wherever site conditions and climate allow vegetation to be established and where flow velocities will not cause scour. A minimum vegetative cover of approximately 70% is required for treatment to occur.

Proposed improvements include replacement of a number of bridge structures over waterbodies, which would have a beneficial effect on hydrology and water quality (see also Section 5.8 discussion of drainage and flooding). Implementation of improvements that modify existing bridge structures across lagoons, streams, and drainages would allow for improved tidal flushing and water conveyance in inland waterways thereby improving water quality and marine habitats. Efforts to minimize fill in corridor lagoons examined using retaining walls; however, the liquefied soils at the lagoons would require deep footings of over 82 feet and would be prohibitively expensive. As such, SANDAG/Caltrans evaluated potential restoration opportunities within each lagoon focused on 1) conventional habitat establishment and restoration through earthmoving activities; and 2) hydrodynamic restoration opportunities to improve the tidal inlets, increase the tidal prism, and reduce tidal muting through modifications to infrastructure features (e.g., bridges and channels) in the lagoons. SANDAG/Caltrans, in conjunction with a number of resource agencies, have identified opportunities to build longer bridges at San Elijo, Batiquitos and Buena Vista Lagoons, which would result in removing some of the existing fill at the lagoons. These potential improvements would result in substantial benefits to water quality and marine habitats by increasing overall water circulation in the lagoon, possibly facilitating a more natural process of tidal flushing and slowing freshwater flows from inland waterways that convey sediment and pollutants during significant rainfall events. This could reduce build-up of sedimentation and water pollutants within the lagoons, which substantially affects biological productivity and quality of coastal waters.

There may be the opportunity to replace the existing rail bridge across Los Peñasquitos with a partial causeway structure that would increase the tidal flow and remove the embankment from the lagoons, and the I-5 tunnel option could allow for the removal of the existing Los Peñasquitos rail bridge structures in the future. In addition, proposed rail options that would remove the existing rail corridor from coastal bluff areas in Del Mar would reduce long-term bluff erosion by eliminating active rail operations and the need for ongoing maintenance activities of the existing shoreline protection system along the bluffs. The feasibility and potential benefits and impacts of improvements would be determined in project-level analyses; however, as part of the conceptual design at the program level, the lead agencies have proposed, at a minimum, maintaining either the same in-water footprint or a smaller footprint than the existing rail corridor where improvements would cross coastal waterbodies.

5.4.3.1 PWP/TREP Lagoon, Wetland and Riparian Enhancement Opportunities

The REP employs a combination of measures to mitigate for coastal resource impacts resulting from implementation of the NCC transportation improvements and community enhancement projects. The combined mitigation program approach recognizes the constrained, primarily built-out condition of the NCC which leaves few opportunities for land acquisition typically necessary to implement traditional, ratio-based habitat mitigation efforts. Even fewer opportunities exist in the NCC for large-scale land acquisitions that could allow traditional ratio-based mitigation efforts to be focused in distinct areas with the goal of establishing large tracts of contiguous and diverse habitat areas within the corridor. However, the NCC is home to six major lagoon systems which represent some of southern California's most significant natural resource areas. These lagoon systems and upper watersheds provide large, contiguous habitat areas that support sensitive habitat for a variety of plant and wildlife species, and that provide water quality, flood control, groundwater recharge and recreation benefits. The NCC's lagoon systems and their habitats are biologically unique and cannot be replicated elsewhere. As such, opportunities to protect the NCC's lagoon systems from potential future degradation and to enhance and expand habitat within these systems requires comprehensive solutions with mitigation efforts focused less on ratio-based mitigation and more on ecosystem-wide enhancements. Given the unique ecological value of the NCC's lagoons, opportunities to improve the ecological function of the systems

exceeds the benefits of pursuing only ratio-based mitigation efforts on the relatively small, fragmented and isolated land areas remaining in the NCC for such mitigation efforts.

The REP, detailed in Chapter 6, provides a unique corridorwide opportunity to assess proposed transportation infrastructure and community enhancement improvements with varying constraints and opportunities. Such opportunities include facilitation of large-scale lagoon restoration efforts that include improved tidal circulation in the San Elijo, Batiquitos and Buena Vista Lagoon systems, preservation, and/or restoration via land purchase of upland habitat areas, and restoration of riparian habitat areas within inland waterways. Restoring tidal circulation in lagoon systems and enhancing riparian and upland habitat areas would significantly improve water quality and the ecological value of the lagoons, riparian systems, and adjacent upland areas to better support Environmentally Sensitive Habitat Areas (ESHAs), special-status species and wildlife. Table 5.4-4 identifies the potential rail and highway wetland impacts discussed in this section by project phase in conjunction with the corridorwide wetland habitat mitigation and enhancement opportunities provided by the REP, which is further detailed in Chapter 6.

The REP includes options for allocating funding from SANDAG's Environmental Mitigation Program for a variety of regionally significant mitigation, restoration, and enhancement opportunities. Mitigation parcel purchases have been based on their potential to protect and enhance lagoon watershed function and services, and meet no net loss of wetlands through establishment and restoration. Other mitigation parcels have been purchased for the purpose of preserving regionally significant resources. For regionally significant lagoon restoration and enhancement opportunities, endowments are planned to fund long-term resource maintenance needs and the development of a Scientific Advisory Committee is planned to advise the large-scale restoration projects. Design of bridge improvements, which inherently enhance lagoon system function and services, are also included in the REP; however, funding for these enhancements would be provided through capital funds. The REP approach to advancing habitat establishment, restoration, and preservation mitigation projects ahead of NCC project impacts, and designing bridge improvements to avoid and minimize project impacts aims to create greater benefits to coastal resources on a corridorwide level than if the habitat mitigation were solely ratio-based and project specific.

Early establishment and restoration of habitat areas will serve to reduce typically required mitigation ratios for project impacts by eliminating impacts associated with temporal loss of wetland habitat functions and values. In addition, early acquisition and management of sites containing high value habitat for long-term preservation, and early phasing of transportation facility infrastructure that is specifically designed to avoid and minimize impacts, enhance lagoon system function and values, and facilitating large-scale lagoon restoration will further serve to mitigate projects impacts associated with both temporal loss of habitat values and temporary construction related impacts. REP implementation will increase the extent, value and success of natural resource protection, restoration and enhancement in the NCC. The REP achieves this goal through developing and implementing a regional plan for the advanced acquisition, establishment, restoration, enhancement and preservation of the NCC's natural resources, infrastructure improvements designed to avoid and minimize impacts and enhance resources, and long-term resource management endowments.

In addition, large-scale restoration plans for San Elijo Lagoon and Buena Vista Lagoon are being developed by various stakeholder groups and the resource agencies. SANDAG and Caltrans have been working with the cities, resource agencies, and stakeholders to help move these restoration projects forward by assisting in planning and funding required technical and environmental studies. Furthermore, SANDAG/Caltrans funded numerous studies to analyze optimized I-5 bridge designs at the corridor lagoons intended to minimize tidal muting east of I-5. These enhanced bridge designs at

San Elijo, Batiquitos and Buena Vista Lagoons will result in possible establishment and/or enhancement of wetland habitat and water quality benefits within the lagoons.

It is recognized that new opportunities for various types of resource improvements may become available in the corridor after adoption of the PWP/TREP, due to factors such as additional funding availability, completed habitat restoration plans, or land acquisition options. In addition, some mitigation opportunities which would promote large-scale ecological improvements to resources may be considered more critical for the region, while others which would contribute to enhancing a smaller area within the corridor may be considered less critical for achieving regional goals. Widespread improvements to natural resources in the NCC require a unique, comprehensive approach to resource enhancement with input from multiple regulatory agencies and stakeholders. These factors make it necessary to maintain flexibility when considering the most appropriate mitigation opportunity.

The REP is the framework used to describe the available resource enhancement opportunities on a corridorwide level based on these evolving factors. The REP framework provides for supplementing the mitigation opportunities package when new opportunities arise, which could be authorized pursuant to future project-specific NOIDs for PWP projects, coastal development permits, or federal consistency review, as applicable (see also REP Implementation Framework section in Chapter 6).

Accounting of REP project implementation, credit establishment and release, maintenance and monitoring will be tracked and reported pursuant to NOID submittals, future federal consistency review submittals, or coastal development permit submittals for all PWP/TREP projects to ensure the overall program implementation is consistent with approved impacts, and meets required mitigation and resource benefits identified in the PWP/TREP Phasing Plan. Each mitigation site will have its own funding and mitigation and monitoring plan with remedial measures in the event the site is not attaining its goals. If a site develops a fatal flaw that cannot be corrected onsite, SANDAG/Caltrans will identify and implement mitigation at another location. In most cases, problems on a mitigation site can be corrected onsite through additional grading, planting, weeding, or soil amendment. A mitigation bank will be established for the NCC and will be drafted to mirror the U.S. Army Corps of Engineers' mitigation bank standards where appropriate. This bank will follow the REP's phasing and establish restoration milestones and credits. In addition, funding could be shifted between projects if a project proposed now is not carried forward for some reason. In addition, the PWP/TREP Implementation Framework ensures that all REP projects are reviewed and monitored as part of the development review process for all other projects included in the PWP/TREP, regardless of the specific Coastal Commission approval process required for each REP project. Wetland mitigation opportunities and other water quality improvements proposed within each waterbody potentially affected by the proposed improvements are described below. Several additional mitigation opportunities are included within the REP for offsetting impacts to upland habitat; see Chapter 6 for details regarding those opportunities.

5.4.3.2 PWP/TREP Policies

Caltrans and SANDAG would implement the following policies to ensure that proposed improvements are designed, implemented, and maintained to provide for maximum protection of marine resources.

- **Policy 5.4.1:** NCC transportation facility and community enhancement projects should be sited and designed so that marine resources are maintained, enhanced, and, where feasible, restored. Special protection should be given to areas and species of special biological or economic significance.

- **Policy 5.4.2:** Uses of the marine environment should be carried out in a manner that will sustain the biological productivity of coastal waters and healthy populations of all species of marine organisms adequate for long-term commercial, recreational, scientific, and educational purposes.
- **Policy 5.4.3:** Coastal water quality should be restored by minimizing wastewater discharges, controlling runoff, preventing depletion of ground water supplies and substantial interference with surface water flow, encouraging wastewater reclamation, maintaining natural vegetation buffer areas that protect riparian habitats, and minimizing alteration of natural watercourses.

5.4.3.3 PWP/TREP Design/Development Strategies

The following design and development strategies provide guidance for designing and implementing specific PWP/TREP projects consistent with the marine resources protection policies of the Coastal Act.

1. Project-level analysis for potential water quality and marine habitat impacts of improvements should be conducted and subject to review during subsequent project-specific federal consistency review, NOID, or coastal development permit review, as specified in Chapter 6, to assess and identify all potential permanent or temporary impacts to water quality and marine habitats and appropriate mitigation measures to ensure project consistency with Coastal Act policies 30230, 30231 and 30233. Project-level analysis should include the following technical studies:
 - Field surveys of potential surface water impacts to further analyze potential impacts on water quality and to seek required permits from the appropriate agencies.
 - Identification of potentially substantial alteration in water-flow and drainage patterns, including increased stormwater runoff, increased groundwater discharge or reduction of groundwater recharge. Project-specific studies should determine acceptable designs and construction techniques to minimize adverse impacts of increased sedimentation that would occur during in-water work in the lagoons and elsewhere. Potential minimization measures and timing windows should be developed in consultation with resource agencies and lagoon planning.
 - Analysis of how the different alignment and design options would contribute to total additional impervious surface and the subsequent potential additional impacts on surface runoff. This analysis would also identify potential mitigation measures, including onsite retention facilities.
 - Delineation of waters and wetlands to determine the extent of U.S. Army Corps of Engineers, California Coastal Commission and CDFW jurisdiction, and consultation conducted with these agencies regarding appropriate mitigation.
 - Analysis of future sea level rise scenarios, and any design options for new bridge structures to reduce the potential for flooding.
2. Permit requirements as part of project-level review would include Storm Water Pollution Prevention Plans (SWPPP) and NPDES permits, and other applicable jurisdictional requirements. Under the requirements of the NPDES California Department of Transportation Statewide Storm Water Permit and the Construction General Permit, an SWPPP would be developed during construction and implemented to reduce pollutants in stormwater discharges and the potential for erosion and sedimentation. The SWPPP would include BMPs to minimize potential short-term increases in sediment transport caused by construction, including erosion control requirements, stormwater management, and channel dewatering for all stream and lake/lagoon crossings. Regional NPDES permit requirements would be followed and BMPs, as required for new developments, would be implemented. These may include measures to provide permeable surfaces where feasible and to retain and treat stormwater onsite using catch basins and treatment (filtering) wetlands, especially in areas around existing stations if the areal extent of surface parking is expanded or at new

stations where new parking surface is constructed. Measures to manage the overall amount and quality of stormwater runoff to regional systems would be detailed as part of the SWPPP. BMPs may include the following:

- Practices to minimize the contact of construction materials, equipment, and maintenance supplies with stormwater
 - Practices to reduce erosion of exposed soil including soil stabilization, watering for dust control, perimeter silt fences, placement of rice straw bales, and sediment basins
 - Practices to maintain water quality including filtration, detention, and retention systems, constructed wetland systems, biofiltration / bioretention systems, grass buffer strips, ponding areas, organic mulch layers, planting soil beds, sand beds, or vegetated systems (biofilters) such as vegetated swales and grass strips designed to convey and treat either shallow flow (swales) or sheetflow (filter strips) runoff.
3. A spill prevention and emergency response plan should be implemented to handle potential fuel or other spills for all construction and maintenance.
 4. Impacts to lagoon, riparian or other isolated wetland habitats should be fully mitigated pursuant to the REP detailed in Chapter 6 as it relates to no net loss of habitat, habitat preservation, and comprehensive lagoon restoration program mitigation.
 5. Options and benefits for coordinating rail and highway infrastructure construction plans in the lagoon areas should be analyzed for potential benefits to lagoon systems and feasibility for rail and highway project implementation.
 6. All vegetated stormwater basins, vegetated filter strips, vegetated swales, and other natural drainage features to be installed per the PWP/TREP may exhibit ephemeral wetland and/or habitat characteristics over time, however, it should be recognized that their primary function is for water quality filtration and treatment, flow control, and infiltration. As such, maintenance within these devices on a regular basis is expected and necessary to maintain their intended function, and is therefore allowed pursuant to this PWP/TREP. These devices are not to be treated as wetlands including for purposes of Design/Development Strategy 11, and Implementation Measure 5.4.7.
 7. Water Quality Management Plan (WQMP) addressing post-construction BMPs to protect coastal water quality. The WQMP shall include, but not be limited to, final drainage plans showing the location and design of bioswales and outlets, and supporting calculations/evidence that demonstrate the facilities are designed to treat, infiltrate or filter stormwater from each runoff event, up to and including the 85th percentile, 24-hour runoff event for volume-based BMPs, and/or the 85th percentile, 1-hour runoff event, with a factor of safety of 2X, for flow-based BMPs.
 8. The WQMP shall prioritize the treatment of the newly created impervious areas. Where it is impractical to hydraulically separate runoff from the existing impervious area, the applicant shall provide treatment for newly created impervious areas and as much of the hydraulically inseparable flow as feasible, based on site conditions and constraints. If it is not possible to separate the flows from newly created impervious areas from the existing impervious areas, the treatment BMPs shall be designed to treat as much of the hydraulically inseparable flow as feasible, and shall bypass or divert any excess around the BMP to prevent overloading the BMP or impairing its performance.
 9. Existing impervious surface shall not be treated in lieu of newly created impervious surface unless it is infeasible to treat the newly added surface. Where it is infeasible or impractical to provide onsite treatment of stormwater runoff from the highway, the WQMP shall document why it is impractical or infeasible to treat these areas.
 10. Landscaping plans shall include only species native to southern California such that the proposed planted areas will be compatible with surrounding natural and manmade areas, except in areas

completely surrounded by urban uses within the interchange. No plant species listed as problematic and/or invasive by the California Native Plant Society (<http://www.CNPS.org/>), the California Invasive Plant Council (<http://www.cal-ipc.org/>), or as may be identified from time to time by the State of California shall be employed or allowed to naturalize or persist on the site. No plant species listed as a 'noxious weed' by the State of California or the U.S. Federal Government shall be utilized within the property

11. An evaluation of the development area should be conducted for all improvements proposed in areas where wetlands may occur and should be submitted with the project-specific NOID, federal consistency review or coastal development submittal. The evaluation should include any changed site conditions that could affect wetland values protected by the PWP/TREP. A wetland evaluation should be completed in the proposed development area (i.e., the proposed development footprint and a surrounding 100-foot buffer area) pursuant to the wetland definition provided by Coastal Act 30121. Should wetland areas be identified within 100 feet of the development area during this process that are not already considered in the PWP/TREP, all wetland resource protection measures included in this PWP/TREP should be applied to the newly identified wetland area.. For any newly identified wetland area, an appropriate buffer/setback should be established, based upon site-specific conditions in accordance with Implementation Measure 5.4.7.
12. Where applicable, submittals for specific project implementation should include an evaluation of impacts and benefits of removal of existing earthen fill from lagoon crossing structures, and of design options for new structures that reduce the amount of fill required in lagoons. Opportunities to improve coastal hydrology/hydraulics in tidal lagoons utilizing specific construction methods or facility designs will be assessed for consistency with the lagoon optimization studies.

5.4.3.4 Implementation Measures

Caltrans/SANDAG would utilize the following implementation measures for all projects subject to NOID procedures:

- **Implementation Measure 5.4.1:** Operational and construction BMPs should be implemented for all maintenance and construction activities in accordance with the Statewide Storm Water Management Plan (SWMP) and the provisions of the NPDES Permit (Order 99-06-DWQ).
- **Implementation Measure 5.4.2:** Maintenance BMPs should be implemented for all improvements to provide preventative measures to ensure that maintenance activities are conducted in a manner that reduces the amount of pollutants discharged to surface waters via Caltrans stormwater drainage systems. Maintenance BMPs should be implemented for the life of the facility and should include litter removal, toxics control, street sweeping, or other approved measures contained in the *Storm Water Quality Handbook–Maintenance Staff Guide*.
- **Implementation Measure 5.4.3:** Design Pollution Prevention BMPs should be implemented for all improvements to prevent downstream erosion, to stabilize disturbed soil areas and maximize vegetated surfaces consistent with Construction General Permit standards. Design pollution prevention BMPs should consider downstream effects related to potentially increased runoff and flow caused by proposed improvements and may include the following measures:
 - Preservation of Existing Vegetation
 - Concentrated Flow Conveyance Systems
 - Ditches, Berms, Dikes and Swales
 - Overside Drains
 - Flared Culvert End Sections

- Outlet Protection/Velocity Dissipation Devices
- Slope/Surface Protection Systems
 - Vegetated Surfaces
 - Hard Surfaces
- Other Approved Measures

NOID submittals for proposed improvements should identify the type and location of design pollution prevention BMPs to be implemented and maintained for specific project improvements consistent with Construction General Permit standards.

- **Implementation Measure 5.4.4:** Treatment BMPs should be implemented for all improvements to prevent or minimize the long-term potential impacts from facilities or activities. Required treatment BMPs should be limited to those determined to be technically and fiscally feasible (i.e., constructible, maintainable, and effective at removing pollutants to the maximum extent practicable), which may include:

- Biofiltration Systems
- Infiltration Devices
- Wet Basins
- Detention Devices
- Dry Weather Flow Diversions
- Media Filters
- Gross Solid Removal Devices
- Other Caltrans-Approved Measures

NOID submittals for proposed improvements should identify the type and location of treatment BMPs, and should confirm the feasibility of identified treatment methods in relation to right-of-way limitations, environmental constraints or hydraulic capacity. Where treatment BMPs cannot be incorporated due to above-mentioned reasons, vegetation should be maximized and every effort will be made to ensure the successful establishment of landscaping and erosion control throughout the project limits.

- **Implementation Measure 5.4.5:** Construction and phasing plans for improvements should preserve the existing vegetation outside the work areas, stabilize slopes with vegetative cover comprised of native plant species and keep the total paved area to the minimum extent practicable.
- **Implementation Measure 5.4.6:** Construction BMPs should be implemented for all improvements to reduce pollutants in stormwater discharges and to eliminate non-stormwater discharges. Construction BMPs should be implemented according to applicable BMP Manuals, and may include the following measures:
 - Temporary Soil Stabilization
 - Temporary Sediment Control
 - Wind Erosion Control
 - Tracking Control
 - Non-Storm Water Management
 - Waste Management and Materials Pollution Control

NOID submittals for proposed improvements should include a construction phasing and staging plan that identifies the type and location of all construction BMPs to be implemented as part of project construction.

- **Implementation Measure 5.4.7:** Buffers/setbacks for wetlands delineated at the time of PWP/TREP certification should be maintained as identified on Figure 5.4-2, unless reduced wetland buffers/setbacks are authorized pursuant to the NOID, Coastal Development Permit and/or Public Works Plan Amendment procedures contained in Chapter 6. For any new wetlands identified and delineated pursuant to Design/Development Strategy 11, development should be sited and designed to minimize wetland impacts, and appropriate buffers/setbacks provided based on a site-specific biological evaluation confirming the buffers/setbacks are adequate to avoid or minimize significant adverse impacts to wetland resources.
- **Implementation Measure 5.4.8:** Debris from the replacement of old bridges or construction of new bridges should be contained, such that debris is not released into lagoons, rivers or other waterbodies.
- **Implementation Measure 5.4.9:** Appropriate BMPs should be implemented to minimize erosion and sedimentation to lagoons, rivers or other waterbodies.
- **Implementation Measure 5.4.10:** Bioswales and detention basins should be placed throughout the project limits to filter runoff prior to reaching wetlands and other waters of the U.S., as space is available and where feasible based on site-specific conditions.
- **Implementation Measure 5.4.11:** Fueling of construction equipment should occur in designated areas at a distance no less than 100 feet from the lagoon, river, or other water bodies and associated plant communities to preclude adverse water quality impacts.
- **Implementation Measure 5.4.12:** NOID or coastal development permit submittals for wetland habitat establishment, restoration and/or preservation/enhancement plans proposed in accordance with the REP detailed in Chapter 6 should include the following information and materials:
 - Clearly stated objectives and goals for the wetland habitat establishment, restoration and/or preservation/enhancement plans.
 - Baseline data regarding the biological, physical, and chemical criteria for the establishment, restoration and/or preservation/enhancement site.
 - Documentation demonstrating the proposed wetland establishment, restoration and/or preservation/enhancement project will continue to function as a viable wetland over the long-term.
 - Technical detail in the project design including, at a minimum, an engineered grading plan and water control structures, methods for conserving or stockpiling topsoil, a planting program including removal of exotic species, a list of all species to be planted, sources of seeds and/or plants, timing of planting, plant locations and elevations on the mitigation site base map, and maintenance techniques.
 - Documentation of performance standards, which provide a mechanism for making adjustments to the establishment, restoration and/or preservation/enhancement site when it is determined through monitoring the enhancement or restoration techniques are not successful.
 - Description of management and maintenance requirements, and provisions for remediation should the need arise.
 - An implementation plan that demonstrates there is sufficient scientific expertise, supervision, and financial resources to carry out the proposed activities.
 - A monitoring program to be implemented after completion of the wetland establishment, restoration and/or enhancement project with appropriate provisions to ensure the project has successfully met the stated goals and objectives.

5.4.4 Coastal Act Consistency

Coastal Act Section 30230

Marine resources shall be maintained, enhanced, and where feasible, restored. Special protection shall be given to areas and species of special biological or economic significance. Uses of the marine environment shall be carried out in a manner that will sustain the biological productivity of coastal waters and that will maintain healthy populations of all species of marine organisms adequate for long-term commercial, recreational, scientific, and educational purposes.

Coastal Act Section 30231

The biological productivity and the quality of coastal waters, streams, wetlands, estuaries, and lakes appropriate to maintain optimum populations of marine organisms and for the protection of human health shall be maintained and, where feasible, restored through, among other means, minimizing adverse effects of waste water discharges and entrainment, controlling runoff, preventing depletion of ground water supplies and substantial interference with surface water flow, encouraging waste water reclamation, maintaining natural vegetation buffer areas that protect riparian habitats, and minimizing alteration of natural streams

Coastal Act Section 30233

(a) The diking, filling, or dredging of open coastal waters, wetlands, estuaries, and lakes shall be permitted in accordance with other applicable provisions of this division, where there is no feasible less environmentally damaging alternative, and where feasible mitigation measures have been provided to minimize adverse environmental effects, and shall be limited to the following:

(1) New or expanded port, energy, and coastal-dependent industrial facilities, including commercial fishing facilities.

(2) Maintaining existing, or restoring previously dredged, depths in existing navigational channels, turning basins, vessel berthing and mooring areas, and boat launching ramps.

(3) In wetland areas only, entrance channels for new or expanded boating facilities; and in a degraded wetland, identified by the Department of Fish and Game pursuant to subdivision (b) of Section 30411, for boating facilities if, in conjunction with such boating facilities, a substantial portion of the degraded wetland is restored and maintained as a biologically productive wetland. The size of the wetland area used for boating facilities, including berthing space, turning basins, necessary navigation channels, and any necessary support service facilities, shall not exceed 25 percent of the degraded wetland.

(4) In open coastal waters, other than wetlands, including streams, estuaries, and lakes, new or expanded boating facilities and the placement of structural pilings for public recreational piers that provide public access and recreational opportunities.

(5) Incidental public service purposes, including but not limited to, burying cables and pipes or inspection of piers and maintenance of existing intake and outfall lines.

(6) Mineral extraction, including sand for restoring beaches, except in environmentally sensitive areas.

(7) Restoration purposes.

(8) Nature study, aquaculture, or similar resource dependent activities.

(b) Dredging and spoils disposal shall be planned and carried out to avoid significant disruption to marine and wildlife habitats and water circulation. Dredge spoils suitable for beach replenishment should be transported for such purposes to appropriate beaches or into suitable long shore current systems.

(c) In addition to the other provisions of this section, diking, filling, or dredging in existing estuaries and wetlands shall maintain or enhance the functional capacity of the wetland or estuary. Any alteration of coastal wetlands identified by the Department of Fish and Game, including, but not limited to, the 19 coastal wetlands identified in its report entitled, "Acquisition Priorities for the Coastal Wetlands of California", shall be limited to very minor incidental public facilities, restorative measures, nature study, commercial fishing facilities in Bodega Bay, and development in already developed parts of south San Diego Bay, if otherwise in accordance with this division.

For the purposes of this section, "commercial fishing facilities in Bodega Bay" means that not less than 80 percent of all boating facilities proposed to be developed or improved, where such improvement would create additional berths in Bodega Bay, shall be designed and used for commercial fishing activities.

(d) Erosion control and flood control facilities constructed on water courses can impede the movement of sediment and nutrients which would otherwise be carried by storm runoff into coastal waters. To facilitate the continued delivery of these sediments to the littoral zone, whenever feasible, the material removed from these facilities may be placed at appropriate points on the shoreline in accordance with other applicable provisions of this division, where feasible mitigation measures have been provided to minimize adverse environmental effects. Aspects that shall be considered before issuing a coastal development permit for such purposes are the method of placement, time of year of placement, and sensitivity of the placement area.

Coastal Act Section 30236

Channelizations, dams, or other substantial alterations of rivers and streams shall incorporate the best mitigation measures feasible, and be limited to (1) necessary water supply projects, (2) flood control projects where no other method for protecting existing structures in the floodplain is feasible and where such protection is necessary for public safety or to protect existing development, or (3) developments where the primary function is the improvement of fish and wildlife habitat.

5.4.4.1 PWP/TREP Wetland Fill and Allowable Uses

The existing location of the developed NCC rail and highway facilities requires that the PWP/TREP improvements occur in areas containing wetlands, and it is therefore infeasible to avoid all impacts to wetland areas during construction of the proposed improvements. Section 5.10 evaluates the PWP/TREP improvements under the Coastal Act conflict-resolution provision (Section 30007.5). As detailed in Section 5.10, the proposed PWP/TREP could be found consistent with the Coastal Act through the conflict-resolution provision of Coastal Act Section 30007.5, when it is demonstrated that there are no feasible less-damaging alternatives for project components that would result in unavoidable impacts to wetland, and that feasible mitigation measures have been included in the PWP/TREP to minimize significant adverse environmental impacts.

Evaluation of Feasible Alternatives

Section 5.10, Coastal Act Policy Conflict Resolution, includes a programmatic analysis of project alternatives analyzed to address mobility deficiencies and enhance multi-modal access throughout the corridor. Based on this analysis, the program of rail, highway and community improvements included in the PWP/TREP provides the least environmentally damaging, feasible project alternative to avoid or

reduce impacts to coastal resources, while implementing Coastal Act policies that mandate protection of coastal resources by 1) minimizing energy consumption and vehicle miles traveled, and protecting air quality (Section 30253); 2) concentrating new development in or adjacent to areas able to accommodate growth (Section 30250); 3) providing and enhancing transit and non-automobile circulation, and assuring that the potential for public transit is provided for high intensity uses (Section 30252); and 4) protecting and enhancing public access to recreational resources in the Coastal Zone (Sections 30210, 30211, 30212, 30212.5, 30213, 30214, 30223, 30252, and 30254). The proposed PWP/TREP improvements consist primarily of improvements to existing transportation facilities located in previously developed and disturbed areas within existing rail and highway right-of-way. Improvements or changes to the existing rail and highway facilities are generally expansions or reconfigurations of existing facilities or, where new rail alignment tunnel options are being considered, would occur primarily below ground; therefore, the proposed PWP/TREP rail and highway improvements would involve limited expansion or encroachment into wetlands and other sensitive habitat areas that might otherwise occur if new transportation infrastructure were to be constructed as separate and distinct facilities from the existing rail and highway right-of-way to address mobility deficiencies and enhance multi-modal access throughout the corridor.

In addition to the programmatic analysis of project alternatives discussed above and included in Section 5.10, a detailed, design-level alternatives analysis for proposed PWP/TREP rail and highway improvements that affect wetlands was conducted consistent with the Coastal Act Policy Conflict Resolution process to identify the least environmentally damaging alternative. Lagoon optimization studies were conducted for San Elijo, Batiquitos and Buena Vista Lagoons to identify the optimal length of bridges and channel design configurations to provide for improved hydraulic lift and facilitation of large-scale lagoon restoration efforts. Additional technical analysis and detailed design avoidance and minimization features for all corridor waterbodies potentially affected by the I-5 Project LPA are discussed at length in the *I-5 NCC Project Supplemental Draft EIR/EIS*. As discussed therein, to minimize impacts to all sensitive habitats, the slopes of the freeway were designed at a steeper 2:1 grade versus the standard 4:1 grade. To further minimize impacts, retaining walls were also included in the project design on cut slopes, but could not be used on fill slopes. Through analysis of lagoon sediment data from geotechnical borings, it was determined that lagoon soil liquefaction would prevent the use of retaining walls to minimize the roadbed fill in the lagoon. Soil liquefaction requires that any structures taller than approximately 6 feet have support piles that are driven to bedrock, which is located at a depth of over 100 feet. All pilings for the bridge supports would be driven to this depth, but this would not be practical for retaining walls. Riprap is used to protect the existing abutments and would also be used to protect the abutments of the proposed bridges. Due to the depth of bridge pilings, riprap is not required to armor the channel bottom.

Potential impacts from auxiliary lanes would be minimized where possible, especially in the vicinity of the lagoons. Auxiliary lanes were only included in the project design where required to relieve traffic congestion and weaving issues between on- and off-ramps. For instance, potential impacts associated with a proposed auxiliary lane between La Costa Avenue and Poinsettia Avenue across Batiquitos Lagoon were avoided, based on elimination of this potential auxiliary lane when traffic analysis determined that it would not be required.

To avoid impacts to wetlands from fill associated with creation of 12-foot-wide bike/pedestrian paths, short retaining walls (6 feet or lower in height) would be used. Another impact minimization option being examined, particularly at Batiquitos Lagoon and Buena Vista Lagoon, would involve obtaining funds to replace these bridges in the first phase of construction (prior to construction of a proposed HOV lane in the median), instead of later in the construction process. This would reduce the overall bridge widths required for staging the bridge replacements, thus reducing wetland impacts by more

than an acre at each lagoon. However, because auxiliary lanes in each direction are proposed at Agua Hedionda Lagoon, resulting in the need for a wider finished bridge, accelerated timing of bridge replacement would not minimize wetland impacts at this location.

Feasible project alternatives and avoidance and minimization measures for LOSSAN rail improvements potentially affecting wetlands are also addressed as part of the lagoon optimization studies at San Elijo, Batiquitos, and Buena Vista Lagoons, and would be determined in project-level analyses and during phased federal consistency review, as applicable, for other lagoon crossings.

Feasible Mitigation Measures

Section 5.4.3 and the following consistency analysis sections for proposed rail and highway improvements demonstrate that feasible mitigation measures have been included in the PWP/TREP as project design features, policies, design/development strategies, and/or implementation measures to minimize significant adverse environmental impacts.

5.4.4.2 PWP/TREP Consistency Analysis

PWP/TREP design and development strategies for proposed NCC improvements would ensure that marine resources are maintained, enhanced, and where feasible, restored. Project-level analysis for potential water quality and marine habitat impacts of proposed improvements would be conducted and subject to review during subsequent project-specific environmental and federal consistency review, as applicable, to assess and identify all potential permanent or temporary impacts to water quality and marine habitats and any additional mitigation measures needed to ensure project consistency with Coastal Act policies 30230, 30231 and 30233. Project-level analysis would include field surveys of potential surface water quality impacts; identification of potentially substantial alteration of in-water flow and drainage patterns (i.e., increased stormwater runoff, increased groundwater discharge or reduction of groundwater recharge); determination of acceptable designs and construction techniques that would minimize adverse impacts of increased sedimentation; analysis of additional impervious surface and increase in surface runoff for different alignment options; impacts and benefits of removal of existing earthen fill from lagoon crossing structures; new structure design options to improve coastal hydrology and hydrodynamics in tidal lagoons; and an analysis of future sea level rise scenarios. In addition, potential minimization and mitigation measures, as well as project construction schedules, would be developed in consultation with resource agencies and lagoon restoration efforts.

PWP/TREP policies and implementation measures require that improvements incorporate measures to minimize impacts to coastal waters. The measures include provisions for site design and planning and incorporation of BMPs designed to control the volume, velocity, and pollutant load of stormwater leaving the developed area. Critical to the successful function of post-construction BMPs in removing pollutants in stormwater to the maximum extent practicable is the application of appropriate design standards for sizing BMPs. The majority of runoff from proposed improvements would be generated from expanded highway facilities. A number of existing treatment BMPs are present within the project limits, including biofiltration swales and strips, extended detention facilities, wet basins, and media filters; with these facilities providing treatment for runoff from associated paved areas within the I-5 corridor. The percentage of runoff that is treated is approximately 7%. The LPA could modify drainage and alter some of the existing treatment tributary areas as it would result in approximately 214 acres of new paved area, with treatment to be provided for approximately 240 acres of the equivalent net new impervious area, representing a net total of 109% treatment throughout the corridor.

The PWP/TREP improvement program would upgrade I-5 corridor facilities with current treatment BMPs to the maximum extent practicable. The program would include analyzing the entirety of the

corridor from a water quality perspective in relation to the impaired receiving water bodies in the NCC and provide for a more comprehensive approach to analyze the hydrology of the entire project area for purposes of improving water quality. Treatment BMPs would consist of permanent measures to improve stormwater quality during the operation of the facility after completing construction. Approved treatment BMPs could include biofiltration systems, infiltration devices, detention devices, dry weather flow diversions, gross solid removal devices, media filters, and wet basins.

Construction BMPs would be implemented for all facility improvements that would reduce pollutants in stormwater discharges and eliminate non-stormwater discharges. Project-level review would also include SWPPP and NPDES permits, where applicable. Under the requirements of the NPDES California Department of Transportation Statewide Storm Water Permit and the Construction General Permit, a SWPPP would be developed during construction and implemented to reduce pollutants in stormwater discharges and the potential for erosion and sedimentation. The SWPPP would include BMPs to minimize potential short-term increases in sediment transport caused by construction, including erosion control requirements and stormwater management for all stream and lagoon crossings. Soil disturbance during the construction phase will incorporate temporary BMPs in accordance with Construction General Permit and the NPDES permit to minimize erosion and sediment transport. Permanent BMPs would be installed upon construction completion to maintain slope stability. Potential pollutants generated during construction phase activities, from stormwater and non-stormwater sources, would be addressed in the SWPPP as required by contract specification. Additionally, measures to manage the overall amount and quality of stormwater runoff to regional systems would be detailed as part of the SWPPP.

Furthermore, the proposed policies and implementation measures require implementation of treatment BMPs determined to be technically and fiscally feasible for all facility improvements that would prevent or minimize long-term potential impacts from facilities or activities. Where treatment BMPs could not be incorporated due to infeasibility, vegetation would be maximized and every effort would be made to ensure the successful establishment of landscaping and erosion control throughout the project limits.

In addition, design pollution prevention BMPs would be implemented for all facility improvements to prevent downstream erosion, which would stabilize disturbed soil areas and maximize vegetated surfaces. Potential design pollution prevention measures include preservation of existing vegetation, concentrated flow conveyance systems, and slope/surface protection systems. Maintenance BMP preventative measures would be implemented for all facility improvements to ensure that maintenance activities are conducted in a manner that reduces the amount of pollutants discharged to surface waters via existing stormwater drainage systems. The policies and implementation measures also requires maintenance BMPs to be implemented for the life of the facility in accordance with the *Storm Water Quality Handbook–Maintenance Staff Guide*, which includes litter removal, toxics control, street sweeping, and other approved measures.

PWP/TREP policies also require submittal of construction phasing and staging plans with future project-specific NOIDs or other project-specific submittals (federal consistency review or coastal development permit) to ensure proposed construction activities do not significantly affect downstream site stability due to changes in the rate and volume of runoff, and sediment load potentially caused by modification of existing drainage patterns, or other potential hydraulic changes from waterbody encroachments, crossings or realignment. Construction and phasing plans for improvements would preserve the existing vegetation outside the work areas, stabilize slopes with vegetative cover, and keep the total paved area to a minimum. As such, the PWP/TREP includes a number of implementation measures utilizing a combination of erosion and sediment control BMPs to address both stormwater and non-stormwater discharges during construction activities. The policies,

design/development strategies, and implementation measures also require that options for coordinating rail and highway infrastructure construction plans in lagoon areas would be analyzed for potential benefits to lagoon systems and feasibility for rail and highway project implementation, pursuant to SB468.

Furthermore, as discussed in Section 5.4.5 and per the proposed policies, design and development strategies, and implementation measures, impacts to lagoon, riparian, or other isolated wetland habitats would be fully mitigated pursuant to the REP detailed in Chapter 6 as it relates to no net loss of habitat through establishment, habitat enhancement, restoration/preservation, and comprehensive lagoon restoration and enhancement. Table 5.4-6 summarizes the proposed PWP/TREP improvements within each lagoon to ensure water quality and wetlands are enhanced beyond standard mitigation.

5.4.4.3 Coastal Act Consistency Analysis Summary

Implementation of a corridorwide REP could restore watershed features once lost by construction of the transportation facilities with upgraded bridges and reduced development footprint in coastal water bodies, and could restore channelized and armored portions of inland waterways and the shoreline at Del Mar Bluffs, where determined feasible. Proposed PWP/TREP improvements would potentially restore water quality and tidal circulation of lagoons, improve conveyance of stream flow and sediment transport from inland areas, facilitate passage of fish and other aquatic species, and restore natural shoreline processes thereby enhancing biological productivity of marine resources and water quality.

Benefits to water quality from the proposed rail improvements would also result from the reduction in vehicle miles traveled (VMT) on area highways that may occur with increased and improved rail service, as fewer roadway pollutants would be present in the surface runoff from the roadways. Reduction in VMT with the implementation of the rail improvements, when combined with the proposed highway improvements that would specifically target improving water quality on I-5, would reduce and better treat stormwater runoff from area highways, resulting in a beneficial impact to water quality throughout the corridor.

Based on available project and environmental data and the policies and implementation measures included herein, the proposed PWP/TREP highway improvements would protect and enhance water quality and marine habitats, and therefore the PWP/TREP is consistent with Sections 30230, 30231 and 30236 of the Coastal Act.

As demonstrated in the section and discussed in more detail in Section 5.10, there is no feasible, less environmentally damaging alternative that would address the mobility and coastal policy concerns of the corridor and avoid impacts to wetlands (Section 30233), and feasible avoidance, minimization and mitigation measures have been provided to minimize adverse environmental effects. Section 5.10 evaluates the PWP/TREP improvements under the Coastal Act's conflict-resolution provision (Section 30007.5). It concludes that denying or modifying the PWP/TREP would conflict with policies in Chapter 3 of the Coastal Act, and that even if the PWP/TREP conflicts with the Coastal Act's wetlands provisions, approving the PWP/TREP on balance is the most protective of significant coastal resources.

5.4.5 Local Coastal Program Consistency

For LOSSAN rail projects included in the PWP/TREP that improve the movement of freight, the local coastal program (LCP) policy consistency analysis provides guidance and background information for analyzing rail project consistency with Sections 30230, 30231, 30233, and 30236 of the Coastal Act, as appropriate and applicable (see Chapter 1 for additional discussion of LCP applicability to rail projects that may fall under the exclusive jurisdiction of the Surface Transportation Board). The corridor's LCP water quality, wetland, and stream channelization policies are summarized with brief city-specific consistency analyses below, which also integrate and supplement the above consistency analysis for Sections 30230, 30231, 30233, and 30236 of the Coastal Act.

5.4.5.1 Local Coastal Program Consistency Analysis Summary

Most of the corridor LCPs include policies that mirror, in part, the requirements of Sections 30230, 30231, 30233, and 30236 of the Coastal Act; however, the LCPs also include a variety of additional, detailed, and city-specific policies and development standards that address potential impacts associated with water quality, wetland resources and stream channelization. It should be noted that many of the City's LCP policies that address marine resources and water quality concerns are also relied upon to address natural hazards through grading, drainage, and stormwater runoff controls. As such, LCP policies that focus on grading, drainage, and stormwater runoff measures are also addressed in more detail in Section 5.8.

Common policy requirements for protection of marine resources within the NCC LCPs include:

- Limiting construction in floodplains and shoreline protection devices pursuant to Sections 30235 and 30236 of the Coastal Act.
- Avoiding grading and development on steep slopes, where feasible, and limiting the duration and timing of grading activities.
- Implementing drainage and stormwater runoff control plans to minimize site erosion.
- Minimizing grading and removal of vegetation.
- Revegetating graded and disturbed areas with native plant species to minimize erosion.
- Implementing drainage and stormwater runoff control plans to minimize site erosion and sedimentation, and to retain and treat stormwater runoff.
- Prohibiting fill of wetlands pursuant to Section 30233 of the Coastal Act.
- Prohibiting impacts to riparian habitat pursuant to the environmentally sensitive habitat area protection policies of the Coastal Act (Section 30240).
- Imposing setback (buffer) requirements from wetlands, streams and the shoreline.

TABLE 5.4-6: NCC LAGOON ENHANCEMENTS SUMMARY

Lagoon	Key Lagoon Features	PWP/TREP Project Component				
		Mitigation (REP)	Bridge Enhancements	Bike/Pedestrian Trails	I-5 Water Quality/BMPs	Long-term Monitoring ¹
Los Peñasquitos	<ul style="list-style-type: none"> 565 acres Carroll/Soledad Canyon Creek Los Peñasquitos Creek Carmel Creek 	<ul style="list-style-type: none"> Deer Canyon II: Upland Establishment (14.6 ac) Lagoon Management Endowment for Inlet Maintenance 	<ul style="list-style-type: none"> I-5 Widened Only, not Replaced at Carmel Creek New flyover spanning Los Peñasquitos Creek New bike bridge at Carmel Creek 	<ul style="list-style-type: none"> Peñasquitos Creek Trail Connection Carmel Valley Bicycle/Pedestrian Enhanced Trail Connection Old Sorrento Valley Road Bicycle/ Pedestrian Enhanced Trail Connections I-5 North Coast Bike Trail 	<ul style="list-style-type: none"> Bioswales (7) Detention Basin 	<ul style="list-style-type: none"> Lagoon Enhancement Plan Being Updated
San Dieguito	<ul style="list-style-type: none"> 456 acres San Dieguito River 	<ul style="list-style-type: none"> Dean Family Trust (Uplands): Upland Establishment (20.8 ac); Upland Preservation (1.5 ac) San Dieguito W19: Upland (9.6 ac) & Wetland (47.3 ac) Establishment; Upland (19.8 ac) Enhancement 	<ul style="list-style-type: none"> I-5 Widened Only, not Replaced 	<ul style="list-style-type: none"> Bicycle/Pedestrian Enhanced Trail and Bridge on West Side of I-5 Coast to Crest Trail Crossing I-5 North Coast Bike Trail 	<ul style="list-style-type: none"> Bioswales (10) Detention Basin Maintained 	<ul style="list-style-type: none"> SCE Restoration Initiated in 2006
San Elijo	<ul style="list-style-type: none"> 491 acres Escondido Creek San Elijo Creek 	<ul style="list-style-type: none"> Laser: Upland (4.1 ac) & Wetland (0.02 ac) Preservation San Elijo Lagoon Restoration Project (SELRP) Funding San Elijo Uplands (30 ac) 	<ul style="list-style-type: none"> I-5 Bridge Lengthened to 560 ft (from 340 ft) I-5 Channel Width Expanded to 265 ft (from 130 ft) LOSSAN Bridge Lengthened to 590 ft (under Alt 2A) 	<ul style="list-style-type: none"> Pedestrian Trailhead Pedestrian Enhanced Trail on Both Sides of I-5 With Bridge Connection to Manchester Avenue Segments of Coastal Rail Trail I-5 North Coast Bike Trail 	<ul style="list-style-type: none"> Bioswales (6) Detention Basin Maintained First Flush Flow Diversion 	<ul style="list-style-type: none"> SELRP
Batiquitos	<ul style="list-style-type: none"> 600 acres San Marcos Creek Encinas Creek 	<ul style="list-style-type: none"> La Costa: Upland Preservation (18.8 ac) Lagoon Management Endowment for Inlet Maintenance 	<ul style="list-style-type: none"> I-5 Bridge Lengthened to 282 ft (from 219 ft) I-5 Channel Width Expanded to 183.5 ft (from 106 ft) 	<ul style="list-style-type: none"> Bicycle/Pedestrian Enhanced Trail and Bridge on West Side of Lagoon Trail on Northeast Side of I-5 Segments of Coastal Rail Trail I-5 North Coast Bike Trail 	<ul style="list-style-type: none"> Bioswales (5) Wet Basin Maintained 	<ul style="list-style-type: none"> Lagoon Enhancement Project Port of Los Angeles/Long Beach
Agua Hedionda	<ul style="list-style-type: none"> 400 acres Agua Hedionda Creek 	<ul style="list-style-type: none"> Hallmark East and West: Upland (3.5 ac) & Wetland (4.37 ac) Establishment; Upland (6.6 ac) & Wetland (0.97 ac) Enhancement; Upland (1.8 ac) & Wetland (0.44 ac) Preservation 	<ul style="list-style-type: none"> Widened Only; Optimization Study Concluded Lengthening Not Highest/Best Use 	<ul style="list-style-type: none"> Bicycle/Pedestrian Enhanced Trail and Bridge on East Side of I-5 I-5 North Coast Bike Trail 	<ul style="list-style-type: none"> None; right-of-way and ESHA restrictions 	<ul style="list-style-type: none"> Dredging and Eelgrass Planting Removal of Toxic Algae
Buena Vista	<ul style="list-style-type: none"> 203 acres Buena Vista Creek 	<ul style="list-style-type: none"> Buena Vista Lagoon Restoration Project Funding 	<ul style="list-style-type: none"> I-5 Bridge Lengthened to 197 ft (from 102 feet) I-5 Channel Width Expanded to 105 feet (from 24 feet) 	<ul style="list-style-type: none"> I-5 North Coast Bike Trail 	<ul style="list-style-type: none"> Bioswales (3) 	<ul style="list-style-type: none"> Buena Vista Lagoon Foundation Feasibility Study completed

Note:

- Long-term monitoring by other responsible agencies is either ongoing as part of current restoration efforts, or proposed as part of future restoration projects.

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These LCP policies are generally applied on a citywide basis in the respective jurisdictions, but in some instances are also applied to specifically address the many significant coastal waterbodies that are identified by the LCP within each city, including:

- **City of San Diego**
 - Los Peñasquitos Lagoon
 - San Dieguito Lagoon
 - San Dieguito River
 - Los Peñasquitos Creek
 - Carroll Canyon Creek
 - Soledad Canyon
 - Carmel Creek
 - Crest Canyon
- **City of Del Mar**
 - Los Peñasquitos Lagoon
 - San Dieguito Lagoon
 - San Dieguito River
 - Crest Canyon
 - Del Mar Canyon
- **City of Encinitas**
 - San Elijo Lagoon
 - Batiquitos Lagoon
 - Encinitas Creek
 - Escondido Creek
 - El Camino Real Creek
- **City of Carlsbad**
 - Batiquitos Lagoon
 - Buena Vista Lagoon
 - Agua Hedionda Lagoon
 - Encinas Creek
 - San Marcos Creek
 - Encinitas Creek
- **City of Oceanside**
 - Buena Vista Lagoon
 - Buena Vista Creek
 - San Luis Rey River
 - Loma Alta Creek

As discussed in detail in the Coastal Act policy consistency analysis above, PWP/TREP improvements could restore water quality and tidal circulation of lagoons, improve stream flow and sediment transport from inland areas, facilitate passage of fish and other aquatic species, and restore natural shoreline processes, thereby enhancing biological productivity of marine resources and water quality. Benefits to water quality from the proposed rail improvements could result also from the reduction in VMT on area highways that could occur with increased and improved rail service as fewer roadway pollutants would be present in the surface runoff from the roadways. Any reduction in VMT with the implementation of the rail Improvements, in conjunction with the proposed highway improvements that would specifically target improving water quality on I-5, would reduce and better treat the pollutant burden in stormwater runoff from area highways resulting in a beneficial impact to water quality throughout the corridor. PWP/TREP improvements would not result in channelization of coastal streams that would be inconsistent with Section 30236 of the Coastal Act. As such, the PWP/TREP is consistent with applicable LCP policies addressing marine resources and channelization of streams and therefore these policies would not need to be amended for implementation of the proposed transportation facility improvements.

In addition, all of the corridor LCPs include specific requirements for addressing stormwater runoff to ensure water quality is protected and, where feasible, is enhanced and restored, although the specific requirements vary between the individual LCPs, and/or within individual LCPs where the San Diego and Carlsbad LCPs include a number of specific LCP community plans or segments. The corridor LCPs collectively include the following range of policies requirements that address stormwater quality:

- Ensure zero increase in runoff by preparing an SWMP.
- If a project site is on or adjacent to sloping lands, drainage systems should be designed so that the peak rate of runoff for the 10-year-frequency storm event will not exceed the rate under undeveloped conditions.
- Assure that there will be no increase in the peak runoff rate from the fully developed site, and neither significantly increase nor contributes to downstream bank erosion and sedimentation.
- Increases in post-construction runoff and sediment above the 10-year storm frequency reconstruction condition, will be mitigated.
- No increase in the peak runoff rate from the fully developed site over the greatest discharge that would occur from the existing undeveloped site as a result of the intensity of rainfall expected during a 6-hour period once every 10 years.
- Assure no increase in peak runoff rate from the developed site over the greatest discharge expected from the existing undeveloped site as a result of a 10-year frequency storm.

Although the proposed PWP/TREP improvements have been sited and designed to minimize impacts to water quality, and would include a number of mitigation measures to protect and, where feasible, enhance and restore coastal water quality, it is unlikely that the proposed improvements could be implemented consistent with each specific City LCP policy requirement that addresses stormwater quality. As such, LCP policy requirements for San Diego and Carlsbad requiring specific stormwater treatment standards for new development present potential policy conflicts that may require amendment to ensure consistency of the PWP/TREP improvements with the certified LCPs.

SANDAG and Caltrans may seek amendments to the LCPs of San Diego, Del Mar, Encinitas, Carlsbad, and Oceanside to allow for conflict resolution under Section 30007.5 of the Coastal Act. Section 5.10 evaluates the PWP/TREP improvements under the Coastal Act's conflict-resolution provision (Section 30007.5). The conflict-resolution analysis concludes that denying or modifying the PWP/TREP to avoid the wetland fill impacts discussed in this section would conflict with several other

Chapter 3 policies of the Coastal Act should it be concluded that the PWP/TREP conflicts with the Coastal Act's wetlands provisions, approving the PWP/TREP on balance is the most protective of significant coastal resources.

Furthermore, all of the corridor LCPs include specific policies that require buffers from wetland and riparian habitat areas, and mitigation requirements where impacts to wetland and riparian areas are permitted. As with LCP policies addressing stormwater quality, the specific policy requirements for buffers and mitigation vary between the individual City LCPs, and/or within individual LCPs themselves, such as for San Diego and Carlsbad, which include a number of specific LCP community plans or segments. The corridor City LCPs collectively include a range of policy requirements that address wetland and riparian buffers and mitigation, some of which include buffer requirements without the option to adjust the buffers, and others that provide for minimum buffer requirements but allow for adjustment if certain criteria are met. Buffer areas for wetland habitats in the certified cities are generally required to be 100 feet, and pursuant to some policies, may be reduced to 50 feet or less if it is demonstrated that a smaller buffer would protect the resources of the wetland area based on site-specific information. LCP policies generally require riparian habitat buffers to be a minimum of 100–50 feet. Corridor LCP mitigation requirements generally include a 4:1 mitigation ratio for impacts to saltwater or freshwater wetland or marsh impacts, and a 3:1 mitigation ratio for riparian impacts, with some variation between the LCPs.

The existing location of the transportation facilities requires that the proposed projects occur in areas within and adjacent to the wetlands, riparian, and sensitive habitats; therefore, the project would not provide the minimum buffer requirements articulated in the corridor City LCPs. In addition, because the proposed REP is intended to significantly enhance water quality and marine resources in the corridor by implementing a combination of traditional and non-traditional measures to mitigate coastal resource impacts and to enhance and restore resources beyond standard mitigation requirements, it is unlikely that the PWP/TREP improvements would meet the traditional mitigation ratio requirements for wetland and riparian habitat areas included in the corridor LCPs. As such, these LCP policy requirements for San Diego, Del Mar, Encinitas, Carlsbad, and Oceanside present potential policy conflicts that would require amendment to ensure consistency of the PWP/TREP improvements with the certified LCPs.

